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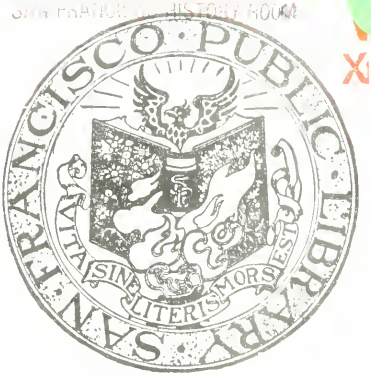

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Pacific
MARINE
REVIEW

JANUARY 1950

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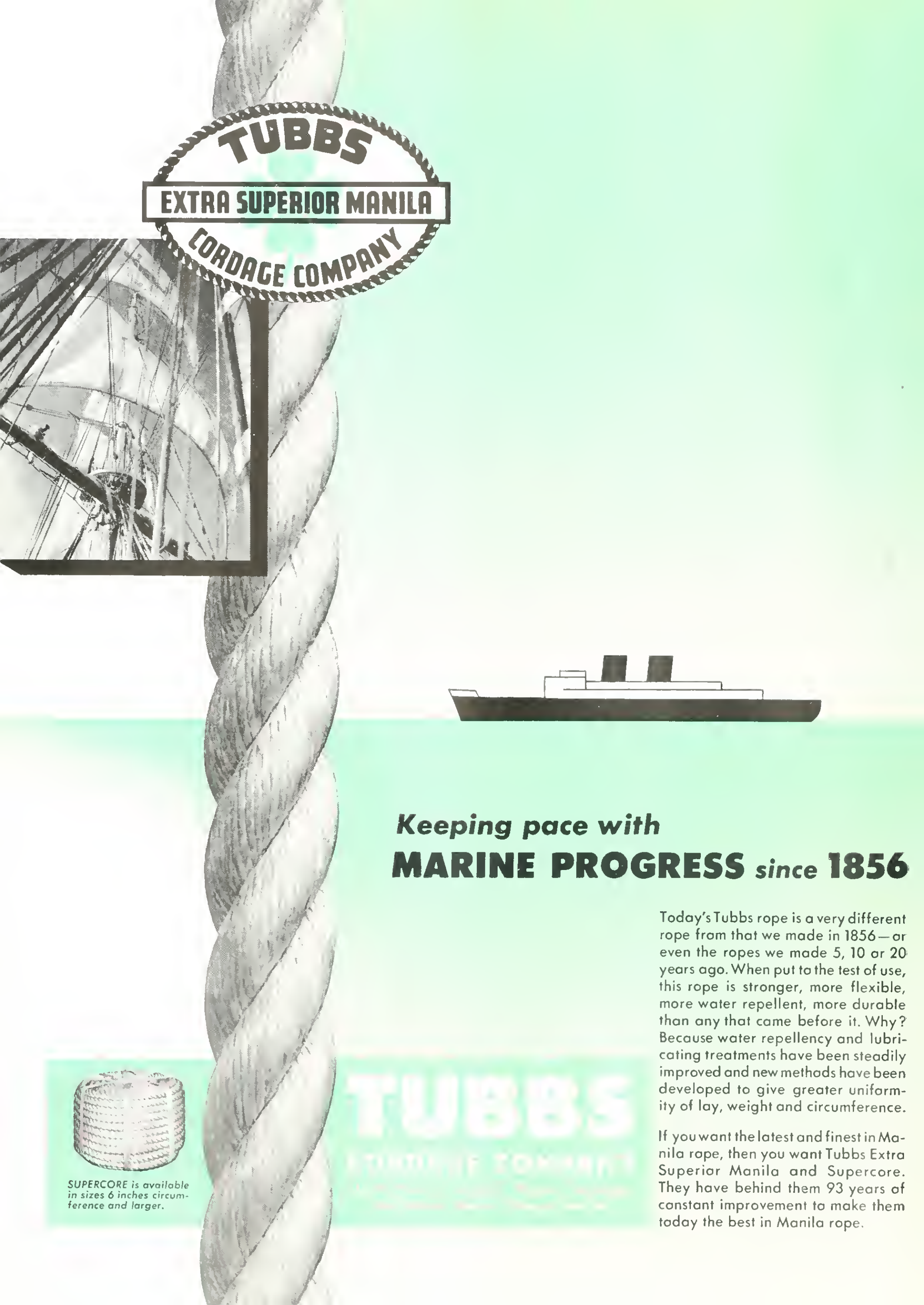

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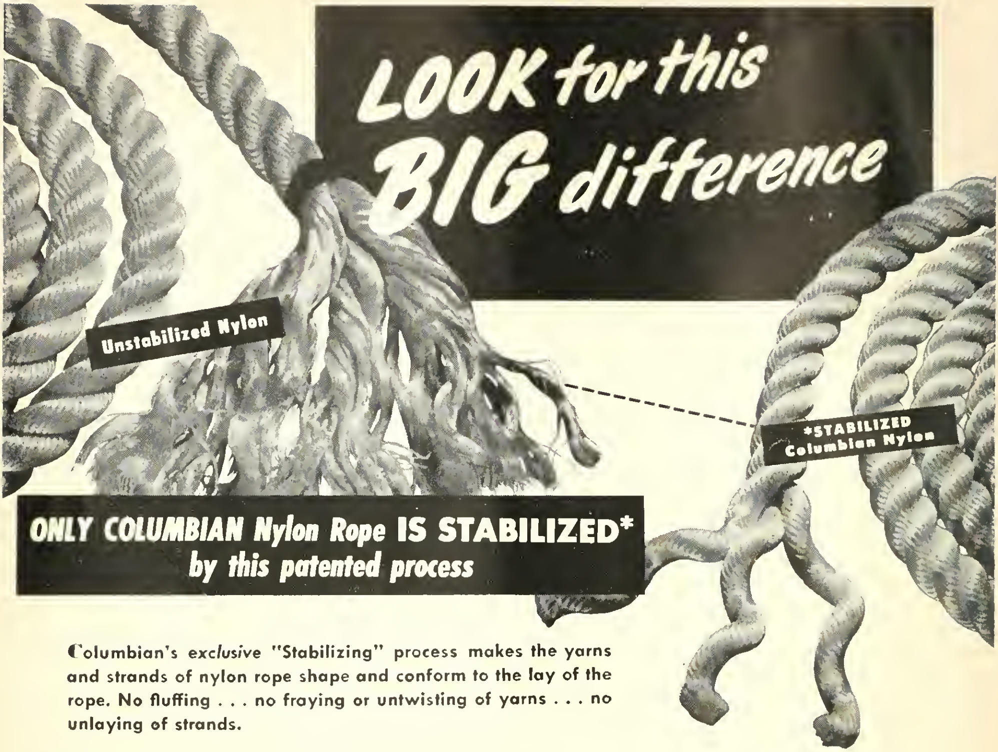

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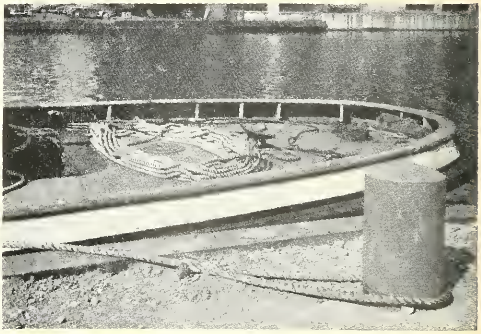

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Pacific
MARINE
REVIEW

Would You Like to Buy Some Paradoxes?

[They aren't cheap!]

THE GOVERNMENT provides us with paradoxes in bewildering array. Some of them seem to offer lush returns, and we reach out and grab, forgetting that someone has to pay. Us! All of us.

A lot has been said (but not enough) about the payments to agriculture for surplus production, and to support high prices. The farmers bought that one, and they and all of us will pay. It isn't surplus money they are producing.

Ads on mail boxes, in street cars, and elsewhere, urge the use of air mail. *Why?* There are plenty of reasons for using air mail, but why *urge* it on the public? More air mail will take more planes and more airport facilities, and some one will have to pay. Us, again. In higher mail rates or taxes.

During a recent airport bond election in San Francisco, the City Controller reported income at the San Francisco Airport as $453,576, of which "flight" revenue was $130,101. Expenses, exclusive of bond interest and redemption, were $1,141,466.00. Note that expenses are more than 8 times the flight revenue and 2½ times the total revenue. With bond interest and redemption added to expenses, tax payers paid $2,771,117 to support a flight operation of $130,000. Maybe it is a good investment. Anyway we bought it.

Employers and employees contribute a percentage for Federal Social Security. They *have to* contribute. But the money goes to the General Fund, and claims will have to be met from Congressional appropriation. We must like that sort of accounting. We bought it.

We buy lots of things. Some good, some a little queer. How about buying a little Time—something that cannot be included in any budget, deficit or otherwise, nor can it be appropriated by Congress. By "Time" we mean a stock pile of good, fast, passenger ships, *American* ships, ready and in service on world routes, *and supported by whatever it costs* in "equalization allowances" to keep the American merchant marine dominant wherever ships sail. Illogical and worrying budget messages do not provide the nation with Time to build ships after first building shipyards. A year's delay in another emergency would be poor economy. A lot of men can die in a year of time. Four thousand ships were lost by our side during the war. Suppose 4,000 were all we had! The war would have gone the other way.

Let's build *American* ships and stay on top, and maybe they will keep us safe. Paying for ships for Europe and Japan, concealed somewhere in the U. S. budget, will not do it! Paradox of paradoxes! Let's not buy that one.

Dost thou love life? Then do not squander time, for it is the stuff that life is made of.—B. Franklin.

Ship Operators View Charter

Top, left to right: W. T. Sexton, president, Coastwise Line; George A. Pope, Jr., president, Pope & Talbot Lines; Lewis A. Lapham, president, American Hawaiian Steamship Company.

Center, left to right: Thomas E. Cuffe, president, Pacific Far East Line; George Killion, president, American President Lines; David N. Lillevand, vice president, Grace Line.

Bottom, left to right: Richard A. McLaren, president, Pacific Transport Lines; A. R. Lintner, president, American Mail Line; John E. Cushing, president, Matson Navigation Company.

Termination by Maritime Commission

THE authority of the Maritime Commission to charter ships under the Ship Sales Act of 1946 expires June 30, 1950. At one time the Commission had upwards of 1500 vessels out on bareboat charter, but as of October 1, when new directives were issued by the Commission, the number had been reduced to 225. The Commission in October served notice on charter operators that most of the charters will be terminated June 30, 1950. Apparently combination passenger-cargo vessels owned by the Commission will not be affected, and there is some question regarding refrigerator ships. The Alaska services come under special legislation. None of the Commission's bareboat charters under the Ship Sales Act may be extended beyond June 30 without extending legislation by Congress, and the Commission has indicated that it will not only not ask for extension but will presumably oppose it. It is likely that some operators may urge extension, especially if they are unable to satisfy their requirements from privately owned fleets, but none have announced such intentions.

As the result of opinions expressed in interviews and letters from charter operators on the Pacific, the *Pacific Marine Review* has developed a fairly composite pattern for the post-charter period as expected by the industry in general.

Without exception, present operators in intercoastal, coastwise, and foreign operations on the Pacific announce their intention to remain on their present routes, and it is not impossible that there might be some broadening of services.

None of the operators indicate any opposition to the long-range government policy of requiring operators to own the ships they are sailing, and they apparently recognize the right of the companies that have purchased their ships to operate them without competition through the charter market. Competition is referred to as "government" because the government has been furnishing ships on a come-and-go basis without investment in them by the operators, and at a low charter rate. The forward-looking, enterprising operators who have been building up their own fleets through purchase or construction have been the ones to take the big risks.

The charter termination will leave fewer ships sailing, but many vessels have been without full cargoes and would have been redelivered before this but for the low charter rate. If, as expected, Congress does not extend general chartering, privately owned vessels alone will be available for domestic and subsidized routes. This reduction in number of ships will tighten up the fleets, and certain fleets on which some operators have been counting will not have any ships to offer, and private charter rates may find new levels. The possibility of foreign flag vessels being chartered for non-subsidized off-shore routes is not being openly discussed. This *is* a possibility, however, and it seems that the government's former policy of selling ships to foreign flags will come home to roost, especially as foreign countries complete their present shipbuilding programs. Those programs will provide many a country with a fleet larger and far superior to its prewar fleets. And we have helped them.

Recent subsidy applications and re-applications commit their principals to the building or purchase of ships. Whether such commitments will serve as justification for extending charter privileges, with charter turn-ins, ship for ship, will be for the Maritime Commission, and ultimately Congress, to decide.

There seems little doubt that some companies will build ships, some will buy and convert ships, and some will charter, and with the industry starting from a bedrock fleet, every increase in cargo potentialities will require new ships. A sounder industry will be the result.

James Sinclair
President,
Luckenbach Steamship Company.

K. C. Tripp, West
Coast Manager
of Moore-McCormack
Lines.

Preview of Ship Building and Ship Operating

THE opinions of such organizations as the National Federation of American Shipping, Pacific American Steamship Association, American Merchant Marine Institute, Shipbuilders Council, and Association of American Ship Owners have been consolidated with those of individuals in the industry to form this general preview. The entire industry has been fighting for legislation and rulings that would facilitate the building of ships, the operation of ships and the liberating of the entire industry from oppressive burdens of various kinds. Some of the expected results for 1950 are:

Ship Building

With **American President Lines'** three V-2000 round-the-world vessels well under way, the company announces its intention of building four additional round-the-world vessels to cost about $40,000,000. They are to have a speed of 19 knots, single-screw, geared turbine drive, with accommodations for 60 passengers and 525,000 cubic feet of cargo space.

Also, the company is studying the possibility of constructing two larger-sized passenger vessels for transpacific service. These are to be 50 per cent larger than the P-2 or *President Cleveland* class.

American President Lines is also discussing the possibility of a major conversion of the P-2 liner *General Meigs,* now in the lay-up fleet.

Matson Navigation Company is negotiating with the Maritime Commission for the completion of the liner *Mariposa,* sister ship of the *Lurline.* There is some thought that a conclusion will be reached this month and that the future of the liner *Monterey* will be determined at the same time.

The **Pacific Coast Steamship Company** (H. F. Alexander) has taken bids on two coastwise liners and Sun Shipbuilding Company is low bidder. Financing is said to be nearly completed with an award of contract to follow immediately thereafter.

Moore-McCormack has applied for resumption of its operating differential on the East Coast to South America run, and if successful, two or three new large fast ships will be built to replace the 20-year-old *Argentina, Brazil* and *Uruguay.*

Grace Line has plans for new vessels, probably two.

The **Maritime Commission's** first *prototype* vessel will be built by the Ingalls Shipbuilding Company and the second *prototype* is now under consideration by the Navy for determination of defense characteristics. It is expected that plans for the latter will be announced in about three months.

Mississippi Shipping Company has plans for a new motor ship for its South America service. Bids have been taken and contract is expected any day.

Pacific Far East Line, San Francisco, has applied for operating differential to the Orient and is committed in the application to the construction or purchase of five ships. These will be modifications of the C-3.

Pacific Transport Lines, San Francisco, has applied for operationg differential to the Orient and in its application is committed to the acquisition of one additional ship.

American Hawaiian Steamship Company has not announced plans for increasing its fleet or replacing its chartered vessels but has a construction reserve of $7,236,111.91, to be expended or obligated for construction or acquisition of new vessels by September 30, 1951.

Union Oil Company, Los Angeles, will announce its decision later this Spring on construction of five tankers to replace its present fleet.

Ship Repair

The Maritime Commission will seek prompt approval of its request for $25,000,000 to begin repair on 134 vessels in the lay-up fleet. The ships have been designated and work can proceed soon after Congressional approval.

Construction Differentials

The so-called long range planning legislation urged by nearly the entire industry would provide construction differentials to all vessels operating in foreign commerce rather than only those with operating differential contracts. Also, where an operator becomes heavily obligated for the construction of one or more large passenger ships, guarantee for construction costs will be secured by the ship itself rather than the entire assets of the owner. Also, the trade-in age of vessels will be reduced from 17 to 12 years. Since some of the C type vessels are approaching the 12 year age and since all of the war-built fleet will be 12 years or more old by 1957, there would be some 1500 ships eligible for turn-in within the next ten years. The report of General Fleming that foreign yards can build ships for 40 per cent of comparative American costs may lead to a much more realistic construction differential for American builders.

Employment

Employment in private yards on new merchant ship construction as of October 1, 1949 was about 29,500. The figure for some 80 repair yards was about 26,000. The figure for naval construction in private yards is not available at this writing.

Ship Operations

Unless the President's budget references prevent it, operating differentials are expected to be liberalized and extended as are tax deferment privileges. The strenuous campaign for adjustment of Panama Canal tolls is expected to result in at least some relief there.

Tramp Shipping

Tramp operators are in a favorable position to get both construction and operating differential assistance on recommendation of the Maritime Commission. Although there has been no active opposition to this program, there are elements in the industry who are somewhat less than enthusiastic over tramp operations but tramp shipping serves the dual long range purpose of maintaining a large U. S. fleet and a competitive freight rate balance.

ECA

It is expected that the new ECA and Military Aid authorization and appropriation bills will again contain the provision that 50 per cent of the cargoes be carried in American ships. The State Department opposes such provisions but it is fairly certain they will be in the bills It has even been suggested that 50 per cent of all export cargoes financed by the government would go in American ships as a matter of permanent foreign policy.

Charters

With the expiration of charter provisions of the Ship Sales Act next June 30, great numbers of chartered vessels will have been returned to the Maritime Commission. Many will be replaced eventually with new ships and there will be a tightening of the private charter market. This point is more elaborately discussed in another article in this issue.

Cargo Handling and Port Economies

The cost of ships in port has become top heavy and, as would necessarily be the case, is leading to relief measures. One large company on the Pacific Coast (Matson) is having giant piers erected in San Francisco and Los Angeles for more efficient loading and unloading and many operators and port authorities have similar plans. For instance, the Cunard White Star Line announces a 1,000 foot pier for its *Queens* which will permit connecting passenger trains to approach the ships under cover. In the Frazer Bailey paper elsewhere in this issue, considerable attention is given to cargo handling as a means of reducing port costs.

Army and Navy Competition

It is expected that competition of the Army and Navy transport services (now Military Sea Transport Service —"MSTS") with private shipping will disappear within the next few months, and that most of even the Army's own supplies as well as all of civilian cargoes to occupied areas (Japan, Korea, Okinawa) will go in private vessels.

Ships chartered to Army, Navy or M. S. T. S. are being redelivered to the Maritime Commission at a rapid rate. It is expected that this will be true also of tankers.

Charters

The cancellation of charters of government-owned vessels will provide added incentive for private investment in ships, for a better market will be available for the private chartering of ships that may be temporarily surplus.

Labor

The labor relations picture is brighter than at any time since the war, especially on the West Coast, with long-term contracts in force. This year should be a peaceful one. The concellation of charters will help here, too, for with inflexible time charters hanging over them, the operators are more anxious to come to terms that would keep their ships sailing.

Marine Insurance

War Risk Insurance

A bill giving the Maritime Commission standby authority to write marine war risk insurance in event of another war will have high priority from the Administration in the 1950 session.

The measure, H.R. 6061, was introduced late in the 1949 session at the request of the Commission, but action was postponed until 1950 after a demand was made for an investigation of the handling of such insurance during World War II by the Commission and the War Shipping Administration.

Because present marine insurance policies are written with a cancellation clause in event of war between any of the great powers, the shipping industry is keenly interested in the bill. As introduced it follows closely the language of the emergency act which was in effect during World War II.

Since all interested groups appear to agree that some legislation for emergency standby authority in this field is necessary, it is regarded as certain that some bill will be enacted in 1950. The major points of controversy are likely to be the extent and specification of the Commission's authority to contract with private underwriters and the question of limitations on the shipowner's right to insure vessels in adequate amounts.

Public Relations

One of the causes of Maritime industry difficulties has been the inability of the Maritime Commission to explain its needs, its problems and its importance in the economy and defense of the country. It has, in fact, been the only important agency of the government which is specifically forbidden to use any of its funds for public relations or publicity. Hence only such limited explanations would be forthcoming as companies and associations who are not always in accord, would issue; and even those reach only a limited audience. Commissioner Carson has come up with a public relations program which the Commission supports and it is seeking an appropriation of $500,000 to keep the public informed of Merchant Marine needs. This could be the beginning of an era in which fewer obstacles would be placed in the way of the industry by not only competitive carriers, domestic and foreign, but government departments as well.

57th Annual Banquet Society of Naval Architects and Marine Engineers, the Waldorf Astoria, New York City, November 11, 1949

The Merchant Marine

— in national economy
— in national defense

By FRAZER A. BAILEY*

THE discussion of merchant ships is timely. The President of the United States within the last two months addressed a communication to the chairman of the United States Maritime Commission, in which he said:

"An adequate appreciation of the importance of the merchant marine to the nation is lacking and is much needed today. Not enough of our people seem to realize that the United States is a maritime nation."

It is gratifying to see the Society of Naval Architects and Marine Engineers lending its aid to overcoming a lagging public appreciation of these facts. There is great encouragement also in the active interest now being shown by many other national and patriotic organizations.

Shipbuilding and ship operation were among the earliest of American industries. In the year 1607 when the first permanent English settlers landed at Jamestown (and before anyone knew there was such a thing as Plymouth Rock), Captain George Popham's Colonists in Maine launched the first seagoing craft to be built in the Americas, a thirty-ton pinnace which he named the *Virginia.* By the time the Pilgrims had landed, this sturdy little craft had made several trans-Atlantic crossings. And by the time of the Revolution and the War of 1812, the American merchant fleet had grown to a stature demanding world respect.

In our early years as a colony and later as a nation, ships helped to mold and sustain the ties which bound us into a national entity. This was before there were highways worthy of the name, and long before the advent of our wonderful American railroad system. It was merchant ships, powered by sail, which provided the transportation so essential to travel and trade between the colonies; and the importation of the essentials of life. While young Thomas Jefferson was spending seven days by buckboard traveling between his home at Monticello, Virginia, and the Continental Congress at Philadelphia, our ships, small but sturdy, were moving up and down the Atlantic Coast. While horse trains were laboriously exploring the interior of the continent, our early sailing ships were trading with ports in the West Indies. We must not sacrifice our maritime heritage. If history teaches us anything whatever, it is that nations, who permit their ships to disappear from ocean trade, are soon relegated to a minor position in world affairs.

It is high time, therefore, for us to set for ourselves a definite goal: it is our firm conviction that the United States should possess a merchant fleet of modern combination and cargo vessels, manned by American officers and seamen, (1) transporting all of our domestic coastwise and intercoastal and territorial commerce; (2) transporting at least one-half of our imports and exports; (3) backed by a fleet of modern passenger vessels operating between the United States and all important world areas; and (4) capable of assisting in the defense of the nation. With perhaps the longest coastline of any nation of the world, bordering upon the Atlantic, Pacific and the Gulf of Mexico, and with serious domestic and world responsibilities, it is not an over-ambitious goal, nor can we be accused of selfishness in seeking it. It does not impose injustice or hardship upon any nation, large or small.

We cannot, in justice to ourselves or to our international responsibilities, be content with a lesser achievement.

As merchant shipping is the handmaiden of commerce, it is logical that the merchant fleet of any country should bear a direct relationship to the overseas commerce of that nation. Those who would have us dependent upon ships of other flags to carry our commerce, are blind to the fact that when emergencies arise in other parts of the world, these vessels desert American ports to seek greater profits elsewhere. This is not a theory. It has happened here.

Secretary of State Embarassed?

We must take issue with the criticism by the Secretary of State of our shipping laws and regulations which require the use of American vessels for the transportation of a reasonable share of our own commerce. He said in effect that it is embarassing to make such an explanation to citizens of friendly nations when they offer to carry our commerce across the seas in foreign ships. Such a philosophy would destroy our merchant marine and greatly impair our national defense.

When we consider that more than 4,000 seagoing ships of slightly over 20 million gross tons representing nearly one-third of the 1939 shipping resources of the allied and neutral merchant fleets were lost during World War II, it is interesting to review what has happened since the war in the replacement of these losses.

Taking into account vessels under construction or on order the total merchant fleet of the world will be 13 per cent larger than prewar and the merchant fleets of the Marshall Plan nations will have 16 per cent greater capacity. These figures include only the privately-owned merchant fleet of the United States and from them has

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*Before annual banquet of the Society of Naval Architects and Marine Engineers, the Waldorf-Astoria, November 11, 1949.

Frazer A. Bailey, President, National Federation of American Shipping, principal speaker at the annual banquet of the Society of Naval Architects and Marine Engineers on November 11, 1949, at the Waldorf Astoria Hotel, pictured with John B. Woodward, Jr., President of the Society

been excluded the United States Government war-built fleet which is considered in the nature of a war reserve. Whether the commerce of the world can support this or a larger fleet at the end of the period of relief and reconstruction cargoes is a condition no one may foresee.

In spite of all of our difficulties, we are making progress.

The United States has today the largest, fastest and most modern *privately-owned* fleet of merchant ships which has ever flown its flag. We now have under American registry, owned by private industry and operating under our free enterprise system 1204 vessels of 14,200,000 deadweight tons — some four million tons more than our similar fleet of 1939. We are, however, seriously deficient in passenger steamships and we have not been able to fully restore our coastwise and intercoastal domestic services. We have only about 40 per cent of the passenger carrying capacity of our prewar fleet. As the United States generates about 75 per cent of the passenger business which flows over routes beginning or terminating in the United States, it is logical and desirable that United States passenger carriers be available to transport our proper proportionate share of this traffic.

More than a year ago the President of the United States and the Secretary of the Navy pointed out the deficiency of large passenger ships which are essential for convertible troop transports. The President urged upon the Maritime Commission that efforts be made to secure the cooperation of American shipowners in the building and operation of ships of these characteristics, and said that such cooperation between the Government and industry should be *"consonant with sound business principles."* To this the industry heartily subscribes.

Within the last year substantial progress has been made through such industry cooperation by the placing of contracts for the building of six large fast passenger steamships to carry our American travelers, and adaptable for military usage. These six passenger steamships will increase our potential troop lift in ships of this character by about 31,000. We will, however, still have only about half of our prewar passenger capacity.

In advising you concerning our privately-owned merchant fleet, I want to clearly distinguish and completely separate it from the *government-owned* fleet of war-built vessels comprising some 2200 large units and of approximately 22 million deadweight tons which will represent our laid-up war reserve.

In the event of an emergency we envision that the private fleet in active operation will receive the first impact. Immediately will begin the breaking out of vessels from the war reserve fleet to make up casualties and to gradually increase the number of merchant ships to support our military operation. This process should bridge over the period until our shipyards have been reactivated and have begun to deliver new construction in volume to meet our war requirements.

We must also distinguish between our *privately-owned* merchant fleet and our overall merchant fleet which has heretofore, and now to a lesser degree, included government war-built vessels chartered to private operators. The overall fleet has in the recent past been vastly expanded by the addition of these chartered government-owned vessels. In June 1947, they amounted to some 1500 ships but have now been reduced to something less than 200 due to the reduction in coal and grain shipments to Europe and other postwar traffic. We are reaching market conditions where it appears the privately-owned fleet may soon take care of the offering traffic. As the use of government-owned ships under charter has always been considered a temporary expedient, we refer to only the privately-owned ships when speaking of the American merchant marine on a long range basis.

Intercoastal and Coastwise, and Depressed Rail Rates

We are greatly concerned about the state of our domestic coastwise and intercoastal services. These were disrupted during the war for national defense purposes and the traffic diverted to land carriers. Had economic conditions remained static this traffic would have gradually returned to its normal and natural channel of water transportation. Unfortunately, however, the operating cost of shipping services increased at a very much higher rate than those of the competing land services, and it has been most difficult for these shipping companies to quote competitive rates while incurring these expanded expenses. Further the railroads are permitted by the I.C.C. to quote greatly depressed rates where water competition is available, at the same time charging in some cases double such rates for the transportation of similar commodities less distances to non-competitive points. That this practice constitutes unfair competition and imposes a burden upon the inland shipper or consignee is obvious. One may not charge one customer a dollar and another fifty cents for the same service and be fair to both. Either one is overcharged or the other is undercharged.

A number of our pioneer shipping companies are struggling with the re-establishment of their former services. These companies have been able to reinstate less than one-third of our normal domestic shipping services. Even this operation has necessitated a very favorable charter hire rate by the Maritime Commission for the use of war-built vessels.

The operating cost increases which the domestic shipping lines have faced have been principally in seagoing wages, cargo handling, terminal and fuel costs. The chairman of the Maritime Commission reminded the shipping industry at the Merchant Marine Conference recently that the total cost of cargo handling alone in some instances runs from 50 to 60 per cent of the freight rate charged for the complete transportation service. When we find any item of operating cost absorbing more than one-half of the total receipts, we should carefully examine into the possibility of its reduction. This is a serious condition for our foreign services but it is even more serious for our domestic lines.

There may be ways and means by which improvement can be made through changes in design in ship and cargo gear and terminals, and this is where the naval architects and designing engineers can perform a vitally important service to the entire maritime industry.

Cargo Handling

There is nothing in the history of loading and discharging ships which justifies any complacency.

About 75 years ago a man named Burton hung a pole on the mast of a sailing ship and with a wood-burning donkey engine and a single fall, began to lift bales of cotton or hogsheads of tobacco through small hatchways into and out of the holds of sailing vessels. Unfortunately we are doing substantially the same thing today. While there have been some improvements, it is hard to believe that great economies in cargo handling cannot be accomplished by further and important advancement in ship design and cargo handling.

In approaching the reducrion of cargo handling costs I suggest that the first objective be the creation of physical conditions permitting the landing and removal of sling loads in the ship's hold to and from stowed position. When I was in the active ship-operating business we made some careful studies of lost motion in stevedoring. We found that 25 per cent or more of the total man-hours were expended in breaking down sling loads and moving cargo from the square of the hatch to the wings, or to the forward or aft bulkheads in the hold. Now 25 per cent of 50 per cent of the overall cost represents the difference between red ink and black ink in many instances. If, under the stimulus of war, ships can be designed which run upon beaches, open their hinged bows, drop ramps and permit vehicles and cargo to land on the shore, I for one, am not prepared to admit that we cannot greatly improve our ship gear and terminal designs for cargo handling. Very recently an ingenious plan was devised for rolling 'tween deck sections under the hatch areas, there to be loaded and rolled back to the wings, thus avoiding the necessity of the rehandling which I have just mentioned. It is a step in the right direction. I believe, however, that somehow and some way, American naval architects will design a vessel into the holds of which sling loads of cargo may be landed, there to remain until lifted bodily out of the vessel at time of discharging, without disturbing the

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Annual Meeting Naval Architects and Marine Engineers

The 57th annual meeting of the Society of Naval Architects and Marine Engineers was held in New York City November 9th to 12th. Nine technical papers were presented by outstanding experts in their fields. Abstracts of four follow. Several of these papers will be published in full as occasion permits and in the meantime original copies may be borrowed by addressing the editor of this publication. The address given by Frazer A. Bailey at the banquet session will be found on page 33 of this issue.

Election of Officers

John B. Woodward, president of Newport News Shipbuilding and Dry Dock Company, continues as president, and other officers elected are as follows:

Honorary vice-presidents, Samuel M. Robinson, and Henry Williams.

Vice-presidents for term ending December 31, 1952, David Arnott, John E. Burkhardt, Walter C. Hemingway, J. Lewis Luckenbach.

Vice-president for term ending December 31, 1950, vice Samuel M. Robinson, Herbert L. Seward.

Vice-president for term ending December 31, 1951, vice Henry Williams, William E. Blewett, Jr.

Council member representing members and associate members for term ending December 31, 1952, James L. Bates, Roy S. Campbell, William H. Leahy, John W. Hendry, Richard H. Tingey, E. B. Williams.

Council member representing members and associate members for term ending December 31, 1950, vice Herbert L. Seward, Charles D. Wheelock.

Council members representing associates for term ending December 31, 1952, Thomas E. Buchanan, Roy W. Chamberlain, Joseph A. Moore.

Treasurer, O. B. Whitaker.
Secretary, Wilbur N. Landers.
Assistant treasurer, C. C. Knerr.
Assistant secretary, Arlo Wilson.
Editor, H. H. Brown.

1950 Executive Committee

J. B. Woodward, Jr., president, ex officio; David Arnott, William E. Blewett, Jr., Edward L. Cochrane, Hom-

George G. Sharp awarded "David W. Taylor Medal."

er L. Ferguson, William Francis Gibbs, J. H. King, Emory S. Land, John F. Metten, C. W. Middleton, Earle W. Mills, William S. Newell, Joseph W. Powell, John E. Slater, H. Gerrish Smith, O. B. Whitaker, treasurer, ex officio.

Naval Architects Awards

The following awards were made to members for notable and outstanding accomplishments in the industry:

The eleventh award of the "David W. Taylor Medal" for notable achievement in naval architecture was made to George G. Sharp, Naval Architect, of New York City and a Vice President of the Society.

The "Captain Joseph H. Linnard Prize" was presented to George W. Kessler, Application Engineer, The Babcock, & Wilcox Company, New York City, for his paper, "Procedures and Influencing Factors in the Design of Marine Boilers," presented at the Annual Meeting of the Society in 1948.

The "President's Award" for 1949 went to Harold G. Acker, Engineer, Central Technical Department, Bethlehem Steel Company, Shipbuilding Division, Quincy, Massachusetts, for his paper, "Highlights of Welded Ship Research," which was selected as the best paper presented before a meeting of a Local Section during the year 1948-1949. The paper was read before the New England Section of the Society.

The "Junior Paper Award" for 1949 was given to Charles P. Furney, Jr., recently graduated from the United States Merchant Marine Academy, for his paper, "Proposed Automatic Tanker Loading," presented before the New York Metropolitan Section.

Eight fifty-year Membership Certificates were presented to the following:

Walter R. Bean of Braintree, Massachusetts.

Rear Admiral William G. DuBose, USN (Retired) of Washington, D. C.

Eric H. Ewertz of New London, Connecticut.

Eads Johnson of New York City.

William S. Newell of Bath, Maine, Past President of the Society.

Joseph W. Powell of Boston, Massachusetts, Past President of the Society.

Allen D. Woods of Greenwich, Connecticut.

A highlight of the program was the presentation of a special gold medal award to William S. Newell, President and Chairman of the Board of the Bath Iron Works Corporation, Bath, Maine, and a Past President of the Society. This award was presented jointly by the American Society of Naval Engineers and The Society of Naval Architects and Marine Engineers "for illustrious and devoted service to his profession, his country, and his fellowman."

Top: Some of the officers of the Society of Naval Architects and Marine Engineers photographed at their annual meeting. Left to right: Clifford C. Knerr, Assistant Treasurer; Arlo Wilson, Assistant Secretary; John B. Woodward, Jr., President; O. B. Whitaker, Treasurer; Wilbur N. Landers, Secretary.

Bottom: Chairmen of the local sections of the Society: Front row, left to right: J. Lyell Wilson, Chairman, New York Metropolitan Section; John Hendry, Chairman of the Local Sections Committee of the Society; George K. Marple, Chairman, Philadelphia Section. Second row, left to right: Professor Louis A. Baier, Chairman, Great Lakes Section; George W. Szepinski, Chairman, Gulf Section; William J. Feldcamp, representing Northern California section; Harold C. Hanson, Chairman, Pacific Northwest Section. Third row, left to right: Hollinshead de Luce, Chairman, New England section; Richard B. Couch, Chairman, Chesapeake Section.

Note: Missing—Thomas B. Forster, Chairman, Southern California Section.

The Design of Propellers

By John G. Hill, Supervisor,
Propeller Group, David Taylor Model Basin, Navy Department, Carderock, Maryland.

Although the circulation theory of propellers provides a logical explanation of propeller action, it is based on certain simplifying assumptions and, hence, corrections must be applied to the theory in order to obtain satisfactory quantitative agreement between calculated and actual propeller performance. The failure of the available correction factors to provide correlation between theory and experiments with wide-bladed propellers led to an investigation of blade width corrections which are discussed in this paper.

Based on Betz's theory of a propeller with minimum loss of kinetic energy and Goldstein's correction for a finite number of blades, several series of propellers were analyzed to determine the ratio of the lift coefficients of the blade sections as an infinite aspect of ratio of airfoils to the lift coefficients which are developed by the same sections when used in a propeller.

Besides the decrease in the lift coefficient ratio toward the blade tip, as would normally have been expected, it has been shown that the lift coefficient ratio decreases as the number of blades increases. The results indicate that practically a straight line relationship exists between the lift coefficient ratio and the reciprocal of the number of blades. An additional correction, which is required to allow for the flow around the blade tips from the face to the back of the blades, has also been evaluated.

The relative merits of camber and angle of attack for developing the lift coefficient and providing the curvature correction have been considered, and it appears that the majority of the lift should be obtained by camber in order to delay the inception of back cavitation and to reduce the drag losses. The use of too much camber, however, will increase the danger of face cavitation.

Using the curvature and tip corrections that have been derived, the performance of a number of propellers has been calculated and compared with the experimentally determined propeller characteristics. These comparisons indicate that the variation from the calculated RPM necessary to develop the calculated thrust was generally less than one per cent. This correlation is considerel satisfactory since the speed of advance can not, in general, be estimated that closely.

This investigation has been concerned with only two types of camber distributions. The effects of other camber distributions on thrust and power are yet to be determined.

Investigation of Cargo Distribution

By Joseph H. McDonald, Naval Architect, and
Donald F. MacNaught of Bethlehem Steel
Company, Shipbuilding Division, Quincy,
Massachusetts.

This paper presents the results of an investigation of liquid cargo distribution, and its effect on longitudinal stresses, for a graduated series of nine modern tankers.

The need for such investigation with suitable recommendations is rendered more pressing by the recent rapid increase in tanker dimensions and the wide range of cargo densities carried.

The basic strength standard for a tanker is calculated for a sea-going condition with all tanks full of cargo

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Presentation of awards and prizes at the annual banquet of the Society of Naval Architects and Marine Engineers, November 11, 1949, at the Waldorf Astoria Hotel.

Top: George W. Kessler of the Babcock & Wilcox Co. receiving from Admiral E. S. Land, USN (Ret) "The Captain Joseph H. Linnard Prize."

Center: William S. Newell, President, Bath Iron Works Corp., receiving from Vice Admiral Edward L. Cochrane, USN (Ret) the Special Joint Gold Medal Award of the Society.

Bottom: George G. Sharp, Naval Architect, receiving from John B. Woodward, Jr. "The David W. Taylor Medal."

Milwaukee's Diesel Fireboat "Deluge"

MILWAUKEE'S new Diesel-powered fireboat, *Deluge,* designed by A. M. Deering of Chicago, is now in regular service. The *Deluge's* rated pumping capacity is 12,000 gallons per minute and it exceeded the rated capacity in tests. It has a service speed of 11 knots with both propelling engines operating at 600 rpm. It has an overall length of 96′7″ and a water line length of 93′. The beam (moulded) measures 23′ and it has a draft of 6′9″. It is of all-welded steel construction and was built by Defoe, Inc. of Bay City, Michigan.

The design of the *Deluge* was influenced by the necessity of its operating in the vicinity of low bridges spanning Milwaukee's rivers. It was built as close to water level as possible so that it will have clearance under the bascule type of bridges that form part of the city's viaducts but railroad bridges and some of the other bascule bridges at street level will have to be raised to allow the new fireboat to pass.

The boat's power plant consists of four four-cycle six cylinder 9″x11½″ Nordberg supercharged Diesel engines each rated at 375 hp at 600 rpm. Two of these engines, located aft in the engine room, are used for both propulsion and pumping. The two forward engines are used only for pumping. The two combination propelling and pumping engines are connected to the propeller shafts by Twin Disc clutches operated by air cylinders.

All four engines are equipped with Bendix-Scintilla fuel injection equipment, and are connected through vertical type Falk speed increasers and Airflex clutches to four standard Allis-Chalmers SJD 10″x8″ single stage, double suction centrifugal pumps. These bronze fitted pumps have rated capacities of 3,000 gpm at 150 psi and 1,600 rpm. In spurt tests they have exceeded their rated capacity by more than ten per cent.

The two Nordberg propulsion engines, which can also be put into pumping service, are of the marine direct reversing type. One is a right hand engine and the other rotates to the left. The cooling system of these two engines and the two pumping engines are designed to dissipate 1800 BTU/BHP/HR from jacket water and 350 BTU/BHP/HR from lubricating oil. The normal jacket water and lube oil temperatures at engine outlet is 160° F. Heat exchangers of the shell and tube type are used for engine jackets and lube oil cooling. Both the raw and fresh water supply for the heat exchangers is furnished by the engine driven pumps.

The Nordberg Diesels are air starting, using 250 psi with a starting valve to each cylinder. A tank capacity of 40 cubic feet provides for 40 engine starts, 16 starts or reverses for each of the two propelling engines and four starts for each of the two pumping engines. Two Gardner-Denver compressors supply air to four 30″x72″ air bottles for starting and general utility.

Among the many advantages Fire Chief Wischer finds in Milwaukee's new Diesel-powered fireboat are lower fuel cost, quicker response to fire alarms, greater maneuverability, improved uniform pressure of Diesel engine driven centrifugal pumps, elimination of the smoke nuisance and less manpower required to man the *Deluge.*

Over a period of six years Chief Wischer reports that the cost of operating the former steamboats, including crews, fuel and boat maintenance, was $624,887. During

Two Nordberg four-cycle, six cylinder 9″ x 11½″ supercharged Diesel engines operating at 600 RPM give the "Deluge" a service speed of 11 knots.

With all nozzles throwing water at the rate of 12,000 GPM, the "Deluge" goes through a pumping test in the Milwaukee harbor.

this period only 33 hours and 17 minutes were actually spent in fighting fires.

In 1948 the cost of coal, supplies and maintenance, not including crew expense, for Fire Boat No. 15, was $12,727. During that year the boat travelled 96 miles and was on fire duty 22 hours. Coal alone for Fire Boat No. 15 costs about $35 a day, or over $1,000 a month, just to maintain standby service.

Cost estimates made on the operation of the *Deluge* and cost reports received on the operation of other Diesel-powered fireboats indicate that the *Deluge* can be operated for not more than 10% of the steamboat cost. This 90% saving does not take into consideration additional savings that will be effected by the reduced crew requirements for the *Deluge*. The Milwaukee steam fireboats required a crew of 20 men working in three shifts for each boat. With the Diesel boat, crew requirements are reduced to 17 men resulting in a saving in crew expense of $11,180 annually. As vacancies occur the crew of the Diesel boat will be further reduced with additional savings.

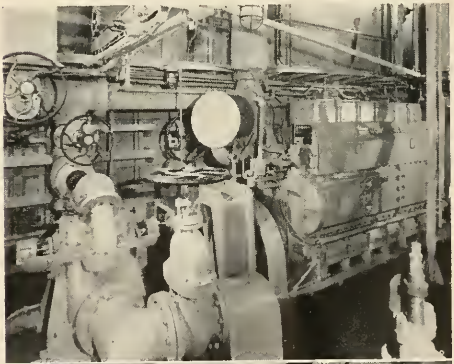
The uniform pressure of the Diesel engine driven pumps is a great improvement over the steam engine driven pumps which caused considerable pulsation to the stream of water being pumped, making it difficult to use hand held nozzles.

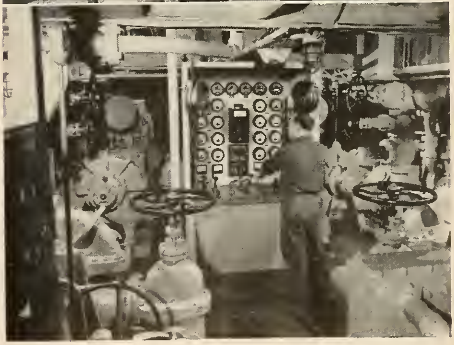
The Milwaukee Fire Department has had difficulty with the city smoke inspector because of smoke emitted from the coal burning fireboats. Smoke abatement is thus an advantageous feature of the *Deluge*.

All the equipment in the *Deluge* is in duplicate permitting the boat to provide about 75% service even though one unit of each type is out of commission. The boat has twin four blade, 40″ diameter, Columbian Bronze propellers, twin propelling engines, twin pumping units, etc. Two troughs run transversely from port to starboard, each drawing water from a sea chest port and a sea chest starboard. Hot water jackets are installed around each of the four sea chests to prevent icing. These draw hot water from a Way-Wolf heating boiler in the engine room. This arrangement permits the closing off of either side in case the boat is working alongside a shallow bank. Each trough supplies water to suction of two of the four main pumps, which in turn move the water in risers to the main loop situated in the upper engine room. The main loop includes four hose manifolds, two forward port and starboard and two aft port

Top: One of four similar four-cycle, six cylinder, 9″ x 11½″ Nordberg supercharged Diesel engines, each rated at 375 HP at 600 RPM, in the engine room of the "Deluge." Two of these engines are used for either propulsion or pumping and two are used only for pumping.

Bottom: The engine room of the "Deluge," showing the propulsion and pumping control booth in the center, and at left and right, the four Allis-Chalmers single-stage pumps, each rated 3,000 GPM at 150 PSI and 1,600 RPM.





and starboard. Each monitor draws from the main loop.

There are four monitors available for throwing water. Three of these Akron Brass monitors are fixed and mounted on the main deck, two of which are located forward on raised platforms and one located aft. One monitor is mounted aft on a telescoping tower which can be raised 21 feet from the water line, over the superstructure to give at least one nozzle the advantage of height in fighting waterfront fires. This monitor is raised or lowered in 45 seconds by a Rotary Lift Company hydraulic lift.

This boat is also equipped with 14 discharge ports, 3 inch increased to 3½ inch, 7 on each side. As soon as the present supply of 3½ inch hose in the Milwaukee Fire Department is exhausted, then 3 inch hose will be used.

The pilot house and the upper engine room are all that are included in the *Deluge's* superstructure. Doorways in the deckhouse offer access only to a catwalk and a platform leading to the engine room below. Except for a lounge forward with toilet and shower there are no quarters provided for the crew. Following common fire department practice the boat is considered in the same category as a pumping engine and her crew is berthed in a short firehouse.

Two 12-inch Carlisle-Finch searchlights are mounted on brackets on either side of the pilot house and two similar searchlights are mounted on pedestals on the main deck aft. An Ideal Electric combination windlass and capstan is mounted on the centerline of the main deck forward. Six single mooring bits are located around the main deck railing.

Power for general ship's service is available from two 30 kw. 220 volt U. S. Motors a. c. generating sets. The principal auxiliary motors require 220 volt 3-phase a. c. but the current is stepped down to 110 volts through Sargel dry-type transformers for the lighting circuits and small motors. Current will be taken from a shore line while the ship is docked. A 3 kw motor generating set can convert d. c. to a. c. for ship's service.

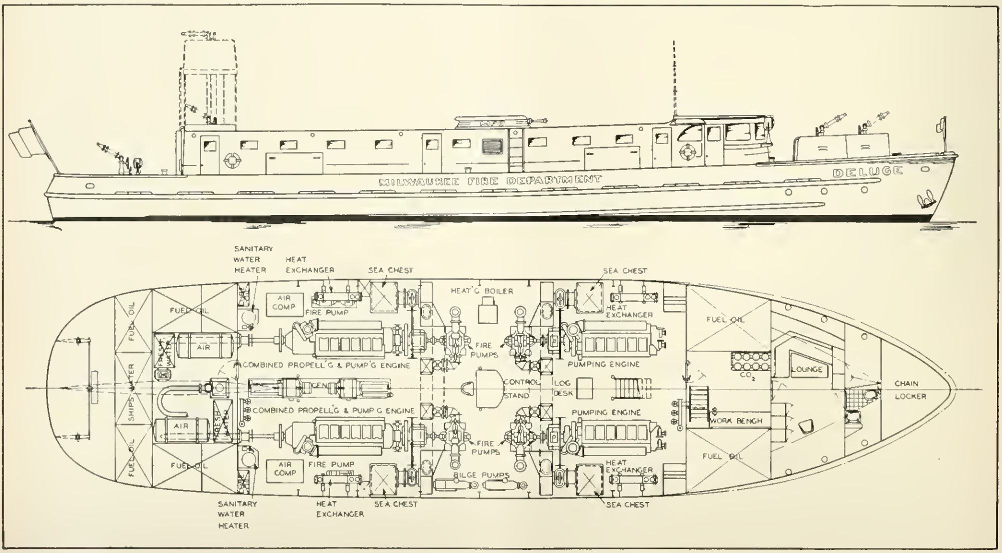
The *Deluge* has two 300 gpm Nash bilge pumps and a 100 gpm Nash ship's fire pump. Aurora Pump Company furnished sanitary and fresh water pressure systems.

To combat shipboard fires the *Deluge* carries a bank of eight portable 75 lb. CO_2 bottles connected into feed lines distributed to funnels throughout the ship. This system is non-automatic, as an automatic fire protection system is impractical since the boat may often work close enough to fires to cause accidental discharge of the system which would put the boat temporarily out of action.

In addition to this system, portable CO_2 extinguishers of ten pound capacity and dry chemical extinguishers of 25 pound capacity are located throughout strategic portions of the engine room

The Fire Boat has two way radio communication and when at its berth dock, it has a dockside connection for fire alarm telegraph register and fire alarm telephone aboard. The vessel has interphone communication throughout.

Outboard profile and engine room arrangement of the "Deluge."



The Captain
—and Shipboard Morale

By F. J. LLANSO

THEME:

A ship minus a crew is a lifeless object.

A ship with a crew of indifferent morale is like a chronic invalid: it is alive, but its life may be easily snuffed out by adversity.

A ship with a crew in high morale is a thing in its prime — and also is clinking sounds in the owner's pockets.

PART ONE—GENERAL DISCUSSION

THE ECONOMIC VALUE of good morale on board ship cannot be denied. If two sister ships, on the same service of the same company, are compared for operating cost against upkeep and performance it will usually be the case that the ship with better morale will show a lower operating cost, a better state of repair and a higher record of performance than the other ship.

To the ship operator who is constantly bedeviled by high accident costs, stiff cargo claims, large stores replacements, poor vessel upkeep, etc., and who is often harried by the necessity of juggling his offshore personnel in order to keep his ships from going "sour," an investigation into and a subsequent program for the improvement of shipboard morale is by no means wasted effort and is by all means good insurance toward lower ship-operating costs.

However, although shoreside executives can do a great deal by concerning themselves with better company-union relations—in seeing to it that their ships *commence* voyages with improved working conditions, better feeding, enhanced comforts, etc. — and although the aforementioned company-union relations, in this era, do have a definite effect on shipboard morale, *it is nevertheless believed that the true, the basic problem in morale is the ancient one of relations between the leader of a group of men and the group of men which follows the leader.* In the case of ships, this would be the master and his crew.

The statement in the preceding paragraph is made because morale is not a static condition of behavior between men. It varies constantly. It may improve or degenerate, but it seldom remains at one level for very long. Therefore, although shoreside officials may be able to insure good morale on board a given ship at the beginning of a voyage, *the job of maintaining or improving that morale rests squarely and only on the shoulders of that ship's master.*

This article, then, is dedicated to the master who, concerned over the low level of morale on board his ship, has paced long worried hours in the dungeon of doubt which could, instead, have been his restful cabin. It is not intended as a criterion, because the writer has had enough seagoing experience to realize that any one ship can be operated efficiently under a dozen different systems. It is, instead, offered as one way of achieving and maintaining high morale on board a ship at sea because, on four different ships in rapid succession, it has proven so.

Good morale may be defined as the unreserved willingness of a person or persons to work and live under the direction or influence of a society or of a leader.

It is a truism that a house is only as good as its foundation. In the same way, the morale of a ship can only be as good as the captain's reputation. If the master will concern himself with building up a good personal reputation—a slow, tedious process, but eventually gratifyingly productive—he is on the right road because it is fact that morale seldom deteriorates from the least crew member up but, instead, crumbles downward from the master. The skipper is the only person on board who can set the example. Therefore, if he sets a good example, why, then, half the battle is won. And, once established, his reputation will sign the register of every ship he is appointed to command.

The first phase in a campaign for good morale can be the candid evaluation of morale at hand. Given below is one method which has been found workable. It must be used fairly by the master, with no attempt to gloss over the facts or to blind himself to actuality. *He must use it humbly.*

CREW'S ATTITUDE

1—They work against the ship and the master. No one smiles.

2—The crew works indifferently. None of the work has "polish." Wise-crack humor prevails.

3—The crew works *for* the ship. Definite desire to do right by the ship. Orders followed faithfully. More worried frowns than smiles.

4—The crew works *with* the ship and master. Everything done with a will, most jobs without necessity of specific orders. Humor is unrestrained.

CONCLUSION

1—There is no morale. A dangerous condition. A serious enough incident can provoke up to mutiny.

2—Morale exists under the surface but must be cultivated to make it grow.

3—Morale well on its way but may be an artificial condition fostered by master's commanding appearance or personality (size, manner) or may be prompted by outright awe of the master.

4—Morale at its best. The crew has self-respect, believes in the ship and its master.

Having determined the level of morale, the extent to which effort must be exerted and time dedicated to improve conditions may be determined by reducing each of the four classifications given above to 25% of the whole. Thus, if crew's attitude is found to be within classification No. 2, then it is apparent that 50% of the captain's working time or effort should be dedicated to boosting morale onboard his command in order to bring it up to its ultimate value, No. 4. Since any level from No. 2 upward is at least tolerable and since dropping down to No. 1 would be *intolerable*, it would be safer always to devote 75% of total working effort and time to insuring a high level of morale. This is advised as "preventive medicine." If this seems an excessive allotment of the captain's time, let the following facts be considered:

1—Every man signed on articles of agreement has previously been found qualified by the U. S. Coast Guard for the specific trade, craft or profession represented in his position on board and he must hold a certificate or license attesting to such qualification before being allowed to "sign on."

2—Every steamship company keeps tabs on every man it has employed as to qualification and fitness for his particular post on board.

Therefore:

3—If these facts be true, any given man on board can do his job and do it *well* without the necessity of prompting or belaboring.

And Further:

4—If a given man does not do his work it is because his morale is low, *not* because he can't do his work.

And finally:

5—All hands being qualified for their work, 25% of a master's time is certainly sufficient for normal check-off duties accomplished by the crew (inspections, etc.) *and the other 75% of the master's time can then be devoted to making the crew want to do their jobs 100%.*

(It goes without saying that a Master is less likely to become entangled in paper work, if his crew is functioning at peak morale.)

Unlike the Navy, where men may remain on duty for months, if not years, on the same ship, in the merchant service the tenure of duty is for one voyage only, per articles of agreement. In view of this—as regards morale—each voyage must be handled on its own merits and problems. Past voyages sometimes have a carried-over influence but, as a rule, only when a majority and representative number of crew members remain and sign articles of agreement again. This may be more common on short voyages than on long ones. Therefore, the best scheme is to follow through with a voyage program of morale, and this article will be based upon that idea.

A Preliminary Aside to the Master

Needless to say, in a morale-building program, the Master's own conduct must be exemplary. "Do as I say and not as I do," rings no bells in the enlightened mind of the modern seaman. The master—as leader—must be a composite patriarch-patrician-tribal chief and must look upon his men as the "tribe" or "clan" who will assist him to make the joint venture (the voyage) a successful, safe and profitable one. Let it be remembered that the crew customarily refers to the master as "The Old Man" when speaking about him among themselves (and when not calling him something else!) This term is a clue to the regard for and the interpretation of the position occupied by the master. By custom, a tribe elected the most experienced among themselves as their *leader and protector.* Excepting for the fact that a master is appointed by other persons than themselves, the situation is the same. The men want to be led by experience and they take at face value (providing the master does not have an unsavory reputation) the qualification of the master as proved by his license and his agreement with them for the pending voyage. *It is up to the master to live up to that trust, come what may. He must, therefore, set the example at all times.*

Each crew member, when he signs on, expects to be treated and dealt with impartially by the master. It is each man's right to expect, and the master's duty to give, impartial treatment to each man regardless of creed, color or race. *Therefore, the master must be absolutely impartial at all times.*

As much as the master expects his crew to be trustworthy, does the crew expect the master to be so. He must see to it that never does an occasion arise wherein his trustworthiness can be questioned. It must be remembered that it is basic for any man to distrust authority—the instinct of self-preservation makes him do that. *Therefore, it is imperative that the master keep his trust with his crew as he would guard something sacred.*

A master who is vengeful or vindictive will, in turn, be victimized by his men. He must deal with every infraction committed by a crew member on the facts alone; indulging in no personalities; remaining stolidly impersonal. (This subjugation of his sometimes outraged feelings may breed in him a crop of ulcers but it will also run him a "sweeter" ship.) No man can take offense at punishment received when it is proportionate to his misdeed and when it is assigned to him in an impersonal manner; or, if he does take exception to a just manner of punishment, he will stand alone in self-sympathy, without the balm of anyone else's pity and with no contaminating effect on the morale of the rest of the crew. (In serious cases, don't "throw the book" at the miscreant. Just let the book—*all of it*—fall gently but firmly on his head. But *all of it.*) Therefore, a master must deal with his men in a totally impersonal, objective manner, showing no rancor or vindictiveness; keeping his temper at all times.

No greater injustice can be done to a man than to bring him to task for performing any unusual duty imperfectly when the manner of its doing was never properly explained to him. In these times, the duty of every crew member is sharply delineated. Assigning a man duty which does not rightfully belong to him is an imposition and a breach of contract. It is up to the master to inform himself correctly on this point. If he does, and if, through his personal effort, no one on board is required to do anything save his contracted job, there will come a day when the master finds his crew doing things for him and his ship on a purely voluntary basis and in excess of the required duty of the crew as a whole. Why? Just a quirk of human nature! And, further, in an emergency everyone will do with a will anything required of him by the master. That is *morale*.

When this something extra is done, the master must be sure to thank the crew member doing it. The master will lose no prestige or authority by so thanking the man; he will gain respect. In this connection: whenever any service that may be considered menial or servile is done personally for the master (a cup of coffee on the bridge, running any personal errand, etc.) he should make sure he expresses his appreciation.

At the beginning of each voyage, the master should begin to "size up" his men; study their normal behavior so that, later on when the voyage begins to "drag out," he can notice immediately whenever that behavior changes and can investigate immediately what is going wrong. In doing this he must take special pains to keep from acting like a "gumshoe" or an amateur Sigmund Freud, so as not to arouse suspicion or foster ridicule. Actually, if this habit is developed by the master, it is easy to "type" all hands because contact with them is so constant on board ship. The master should keep the "case histories" to himself, confiding in no one. If attention is paid to this detail, it will be highly interesting to note how much a man's behavior can change in the course of a long voyage. Knowledge of that fact alone, can be valuable when a man who is going sour is being talked to by the master; because the mere mention to the man of how much he has changed, is oftentimes enough to "snap him out of it" . . . what made him laugh when the voyage was young, worries and frets him as the voyage grows long.

Handling His Officers

Any master who believes it necessary to "ride" his officers to keep them on their toes will accomplish exactly the opposite result—they will "lay down" on him. Likewise, any master who believes it necessary to prove his own value by "breaking down" his officers when reporting upon them to his seniors ashore, will never get the whole-hearted cooperation of his officers. That sort of reputation is acquired quickly and will spread throughout a company's fleet like a prairie fire. It may interest the master who indulges in these practices, to know that the usual reaction from the company's officers ashore to a master's recurrent unfavorable reports on the *majority* of officers sailing under him, is the following: "Great Scot! Can't he get any good out of any officer?" And it may further interest this master to know that even though such an unfavorable report is made on an officer, the company's officials may easily dig up evidence from a dozen other skippers that the officer in question is certainly satisfactory. It must be remembered that few companies care to retain officers on their offshore roster, who are not satisfactory. And they seldom do retain them, especially in these days of a reduced fleet.

If a master—at the all-officer meeting suggested later in this article—will assure his officers that he would much rather speak well of them than not, he will have taken a long stride toward getting their unstinting cooperation. But the master must eventually prove the honesty of that statement. If he gossips in a derogatory manner about his officers, he will weaken his position; the gossip will out and will return to plague him with his indiscretion.

Putting an officer on his honor has never been a misplaced confidence because he has, at least, been given the chance to prove himself. And if he does, under those conditions, there will be two happy people: the officer and the master who placed him there. Let it be remembered that an officer is vitally concerned in his own reputation. Maintaining a good reputation is his assurance of continued employment and, more important, advancement. Without a good reputation, his license can be nearly or totally worthless. This fact is sometimes illustrated when officers with high issue numbers on their licenses are found sailing in junior positions.

It is vitally important that the chastisement of an officer, who has ignored his code of honor and failed himself regarding conduct, be accomplished in the utter, two-man privacy of the master's office. It must be remembered that if there is anything in that officer's character worth salvaging, that part of the officer's make-up is suffering torture, realizing its error only too well and ready and willing to "take its medicine." If, on the other hand, a public example is made of that officer's chastisement, the last vestige of a desire to atone leaves the mind of that officer and rebellion is his reaction.

> Note: It is believed that there is something worthwhile in all men. A smart skipper will try to extract that good out of all men in his crew, no matter how *little* it may be in the case of some individuals. By doing so, a master achieves the acme of administrative efficiency with the personnel at hand.
>
> The writer is convinced that a shipload of men of average ability who are on the job all the time, is worth infinitely more than a shipload of "master minds" who are not on the ball at all times; because the saying, "What good is a good man when he isn't there?" is as gospel true as it is ungrammatical.

When necessary to "dress down" an officer it should be in only the most serious cases—where a witness is considered necessary—that anyone else should be allowed to witness the bawling out. The head of department to which that officer belongs, is the proper witness; the meeting always to be in the privacy of the master's office.

Passenger-officer relations are desirable for many reasons. The passenger feels more at home if he is allowed this association. The officers have a better chance to become personable future masters or chief engineers. Nothing is more damaging to a company's prestige than to have a complete boor as master of a ship, or a master who treats passengers as so much passage-paying cattle. The opportunity of advertising the company's services to the passengers through the medium of the officers on board, is a strong reason for allowing such association. A little "pep talk" with the officers at the beginning of each voyage will straighten them out on this matter before any damage is done.

Thus, assuming that a company's policy in this matter does not bar all officer-passenger relations or that it leaves the subject up to the discretion of the master, it would seem far better to put all officers on their honor at the

(Please turn to page 61)

Baltimore Installs Harbor Radar

—Follows Liverpool (England) and Long Beach (Calif.) With Modern Service

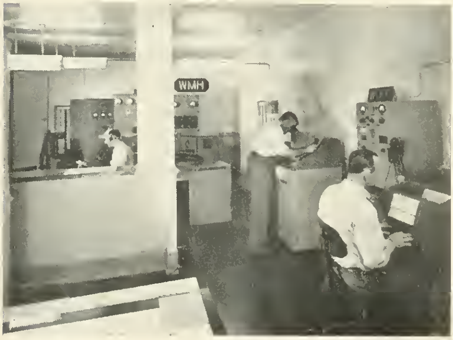
Baltimore Harbor Pilot Boat

BALTIMORE recently became the third major port in the world to put into operation a harbor radar system.

The equipment will be used in a navigational aid research program designed to assist ships entering and leaving the port in fog and bad weather, to provide continuous observation of harbor shipping, and to give immediate information on the location of any shipping casualties in the harbor.

The radar equipment, a Westinghouse commercial marine radar unit, provides port operators with a 12½ inch radar "chart" of harbor shipping movements at ranges from 80 yards to 40 miles. It is installed at the City Recreation Pier in the radio control room, so that radar observations can be transmitted directly to harbor shipping over stations WMH and WJY, the city's ship-to-shore radio stations.

Control Center, Port of Baltimore



The radar, manufactured at the Wilkens Avenue plant of the Westinghouse Electronics and X-Ray Division, has been made available to the city on a long-term loan by the Division. The only other ports in the world equipped with radar are Long Beach, California, and Liverpool, England.

The radar equipment was installed at the Recreation Pier because this position permitted a clear view of the active inner harbor, allowed direct communication to vessels, and was convenient to the Chesapeake Bay Pilots Association offices which are in the same building.

Radar Antenna

Maximum Harbor Coverage Assured

The radar unit consists of three major parts, one of which, the console, is located in the transmitter room. The antenna, protected by a large mushroom-like plastic dome, is located atop one of the radio towers, 140 feet above the water with the transmitter at the base of the tower. From this vantage point a maximum coverage of the harbor area is possible.

The radar scope picture is shown on the disc-like face of a 12½ inch cathode ray tube—similar to those used in television—mounted in the console. Water surfaces are dark while any objects—ships, buoys, shore lines, harbor buildings, etc.—are indicated in a bright fluorescent pattern. Thus, the harbor outline appears as a continuous chart on the radar scope despite varying weather conditions. The radar operator has six ranges available—at one, two, four, eight, twenty and forty miles—for uses varying from close inspection of the inner harbor up to an extensive view of the entire harbor.

A special feature of the equipment is an "electronic ruler"—an adjustable circle on the radar scope which can be set to measure and report the exact distance of objects from the pier with an accuracy better than one-tenth of a mile. This information relayed to a plotter enables him to establish the exact position of a vessel on a chart of the harbor. In addition, the radar observer can reference the position of the vessel to the radar presentation of buoys and prominent landmarks which define channel limits, turns and anchorages.

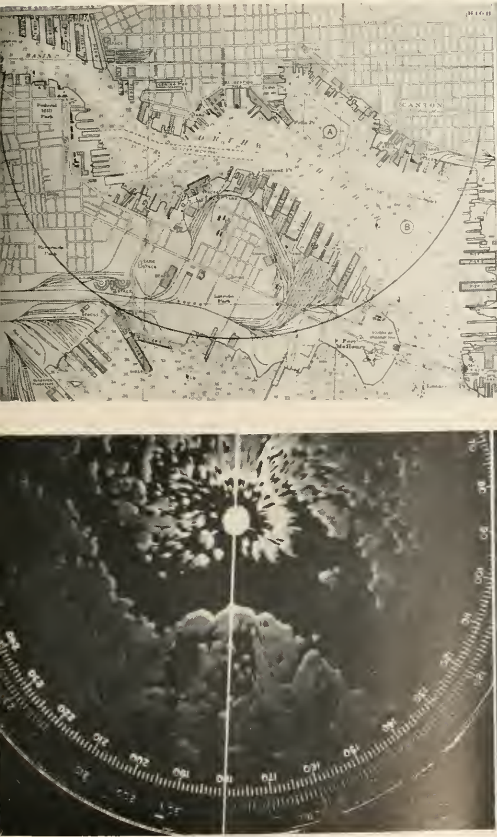
The radar impulses sent out from the transmitter use a narrow beam and last for only one-quarter of a millionth of a second, making possible definition of ships close together, as well as allowing range measurements on ships at different distances from the pier but on the same bearing.

Although experience thus far has shown the feasibility of using radar to aid ships, a period of experimentation will precede actual use of the procedure during poor visibility. During this period radio operators will receive additional training, pilots will be made familiar with procedure, and the harbor will be checked for possible "blind spots" where large harbor installations block off the straight-line radar waves.

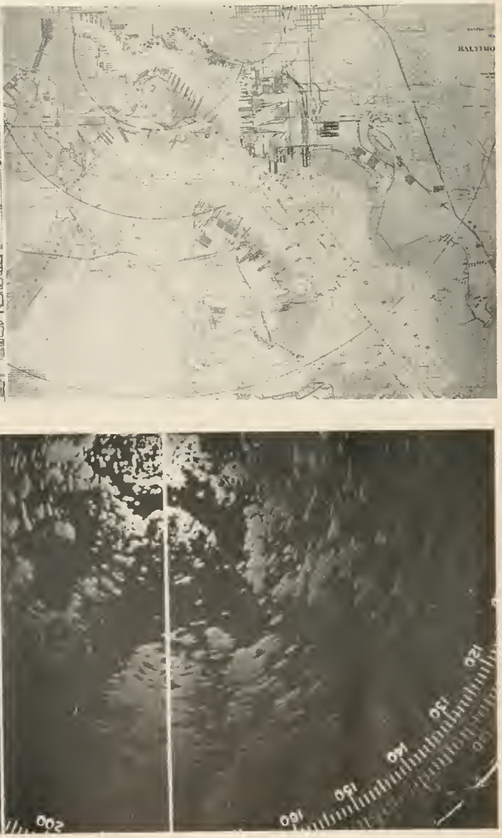
It is expected, though, that the excellent communication facilities available at the port will make possible the use of the radar for its designed work much earlier than would otherwise be possible.

Radar Scope and Chart
One-Mile Range

At the lower right hand corner of the chart appears Fort McHenry, one of the four places in the United States where the flag may properly be flown continuously.



Radar Scope and Chart
Four-Mile Range



150-Ton Pressure Vessel

Built by Babcock & Wilcox for Navy

A 150-TON PRESSURE VESSEL, built by The Babcock & Wilcox Company for the testing of underwater equipment at the Naval Ordnance Laboratory, White Oak, Md., and now installed there, will simulate ocean water pressures down to a depth of half a mile below the surface.

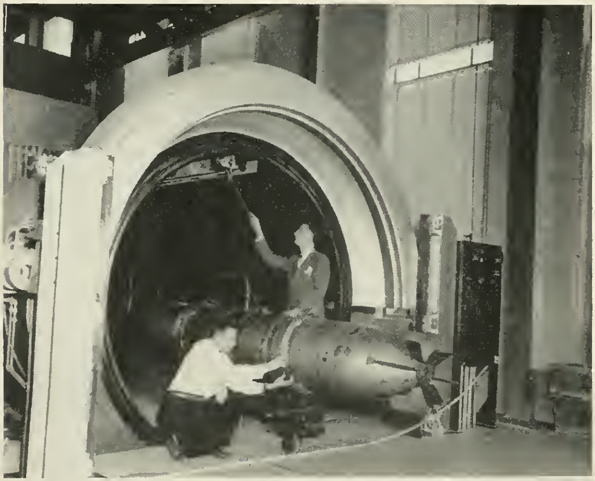
The vessel is a heavy horizontal cylindrical shell of steel plate, with one end sealed permanently and the other closed by a door lifted hydraulically. Three seven-inch ports of heavy glass along the sides of the shell allow observation of the interior while testing is taking place.

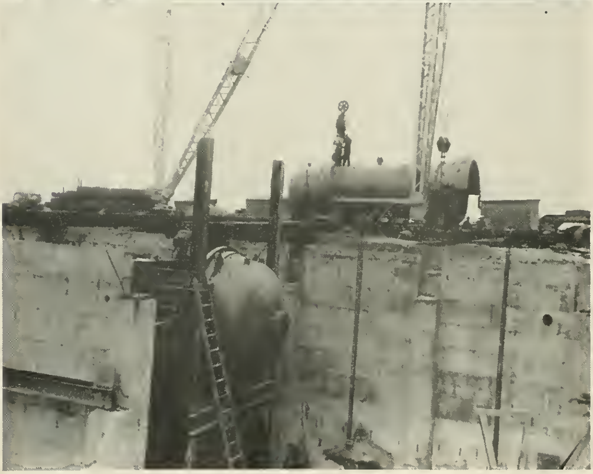
Certain underwater apparatus and instruments which are exposed to high pressure and other submarine equipment such as divers' suits, can be tested in the vessel.

Underneath the vessel is a transfer tank in which water is stored while not needed for testing. After the vessel is filled with water, additional water is pumped in to raise the pressure, or water is relieved to lower it. At the conclusion of the test, the water is drained back into the transfer tank, the door is opened and the object under test is removed.

Thirty-six feet long, the vessel has an inside diameter of eight feet, with walls four inches thick. Its total internal volume is 1,994 cubic feet. It takes 61 tons of water to fill the vessel which will withstand a pressure of 1,000 pounds per square inch.

The shell consists of three courses, a shell head and a shell ring, each joined to its neighbor by a girth weld. Rolled plate of 70,000 psi tensile strength, per ASME Spec. SA-212, Gr. B, was used in this fabrication. The castings were unusually large; each weighed around 35 tons in the rough. The shell courses were rolled from this four-inch thick steel plate, the edges of which were pressed hot to obtain





Top: Opening of 150-ton pressure vessel built by The Babcock & Wilcox Company for testing underwater equipment at Naval Ordnance Laboratory, White Oak, Md. George Mackas, mechanical engineer, and Dr. Leslie Ball, chief of the Mechanical Evaluation Division of the Laboratory, inspect the arrangements before test.

Bottom: Pressure vessel being installed. Upper right, shell of the vessel about to be lowered.

the desired curvature. They were then preheated and welded longitudinally. The shell head was hot formed from one plate by spinning to an elliptical shape. Then the girth welding grooves were machined. The shell courses, head and shell ring were lined into position on drum turners and rotated slowly under automatic arcs to make the girth welds. The entire shell was held at preheat temperatures to prevent cracking.

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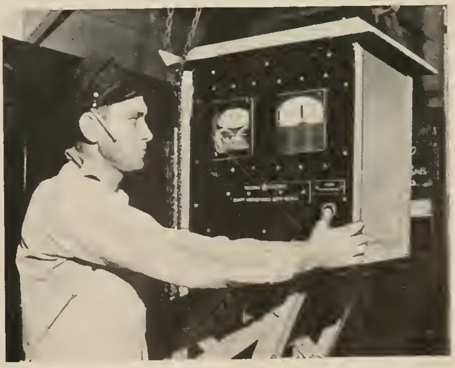
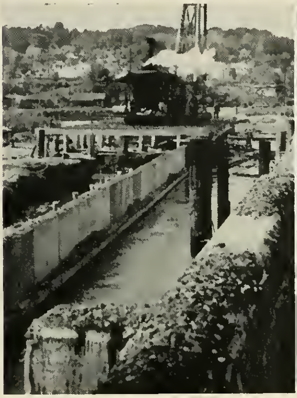
That part of the equipment which registers the information and contains the instrument's controls can be mounted anywhere aboard ship, in the engine room, at the engineer's desk, or on the bridge.

A General Electric marine shaft-horsepower-hour-meter unit, installed for operation on tanker. Indicating instrument shown at right, integrating meter at left.

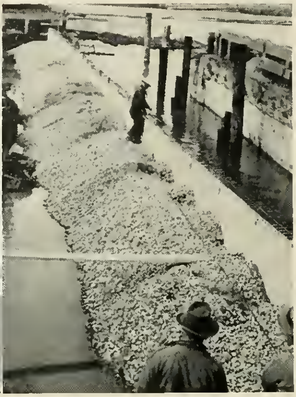


Port of Seattle Salmon Bay Fishing Terminal

TIMBER structures are, of course, set on concrete foundations. When, however, a concrete structure is placed on a timber foundation, it is strictly a case of "man bites dog."



View of bulkhead from the north.



Southerly view of bulkhead showing gravel fill.

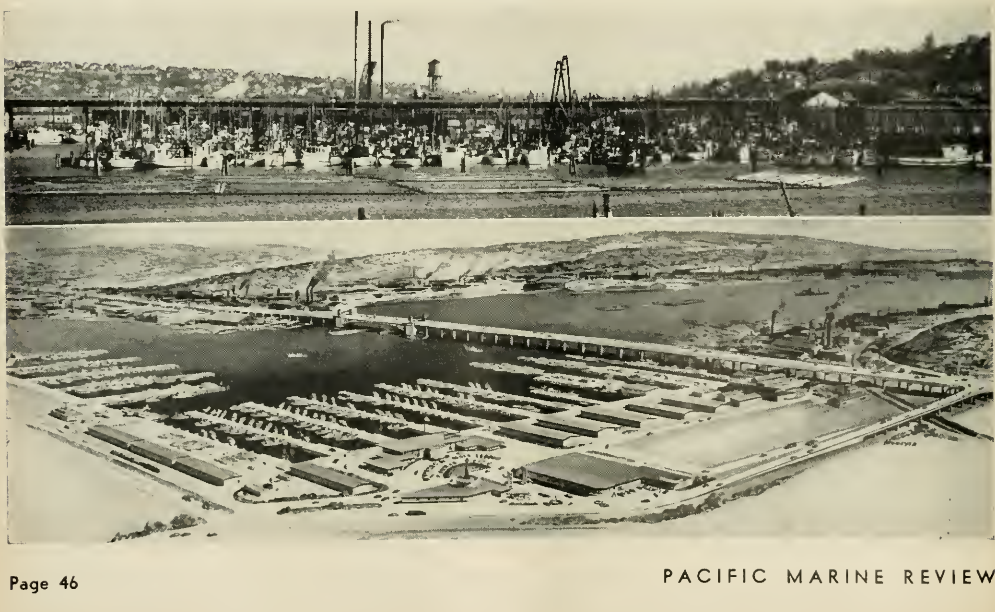
The accompanying photograph shows installation of a concrete bulkhead retaining wall set on a timber relieving deck at the Port of Seattle's Salmon Bay Fishing Terminal, which is now being further developed to provide additional facilities for Pacific Northwest's huge fishing fleets.

In 1914 the Port of Seattle installed a timber bulkhead and fill to provide land areas for terminal facilities. This bulkhead was supported laterally by a continuous relieving deck on piling, this, in turn, being supported by counterforte piers extending into the bay.

When the United States Government Locks were completed late in 1916, the lake water level was raised to a constant three feet above the relieving deck surface. Being constantly submerged in fresh water, periodic examinations have revealed

Top: So many fishing vessels are moored at the Port of Seattle's Salmon Bay Fishing Terminal that they completely obscure the piers. This picture shows about 500 all in at once.

Bottom: Architect's visualization of how the Port of Seattle Salmon Bay fishing terminal will appear when all work is completed.



the relieving deck structure to be excellently preserved.

When, therefore, it became expedient to provide a wharfhead for further terminal operations, precast concrete "L" sections were fabricated and set on a sand cushion on this timber relieving deck. The gravel fill allows percolation of water to the bottom to relieve lateral hydrostatic pressure on the vertical legs of the sections.

A poured concrete cap and timber bullrail will complete the top of the retaining wall, and earth fill, and paving will complete the wharfway.

Work on the job was done by General Construction Co., general contractors, under the direction of George T. Treadwell, chief engineer, Port of Seattle.

Work at the Salmon Bay Fishing Terminal will include construction of a four-lane viaduct approach, dredging and filling, new piers, net sheds and restaurants, lounges, and recreational areas. When completed, there will be moorage space for 1,000 commercial vessels, and it is expected that the facility will be one of the outstanding marine tourist attractions in the United States.

New Reliner for Diesel Bearings

Harold Webb, superintending marine engineer, Seattle Port of Embarkation, has come up with another money-saving device of his own design.

This one is a machine to reline diesel engine bearings by having molten babbitt poured into the bearing as it revolves, fastened to a jig, at a high rate of speed.

Known among marine repair people as "spinning a bearing," this process of casting the babbitt by centrifugal force results in a finished product of higher quality and greater durability over the one derived from the old method of fixed pouring.

By centrifugal force the metal is packed more tightly and evenly, air bubbles are eliminated, and more of the poorer metal and foreign substances are caused to settle near the surface where they may be ground away later by machine.

The three-horsepower electric motor used to "spin the bearing" has two speeds and a maximum of 1,200 revolutions per minute.

According to Webb, this machine is the only one of its kind used by the Army anywhere and the only one now known to exist in the Pacific Northwest. Previously, when bearings from Seattle Port of Embarkation vessels needed relining, they were sent to San Francisco to be "spun," or were relined by the less acceptable method of fixed pouring.

It is estimated that the Port can save approximately $57.00 on each bearing spun on its own machine which cost about $1,000 to build. The Port has some 120 bearings relined a year.

Among Webb's other self-designed devices are an improved type fire nozzle and a ship's boom testing machine.

Explaining the operation of a new machine for use in relining diesel bearings, with the aid of centrifugal force, is Major Perry Edwards, officer in charge of the marine repair shop. Observing is Edward A. Black, co-owner of Commercial Ship Repair, Inc., Seattle (center) and Harold Webb, superintending marine engineer, Seattle Port of Embarkation, the designer of the machine. Major Edwards is pointing to the bearing which is fastened to a jig and is relined with molten babbitt as it spins at high speed.

Molten babbitt is poured into a spinning bearing by Harold G. Cook, Seattle Port of Embarkation machinist, in a test of the new machine designed by Webb (second from right). Witnessing the operation which took place in the Seattle Port of Embarkation's marine repair shop are Major Edwards and Black. The machine-method, which relines the bearings with the aid of centrifugal force, is much superior to the old method of fixed pouring.

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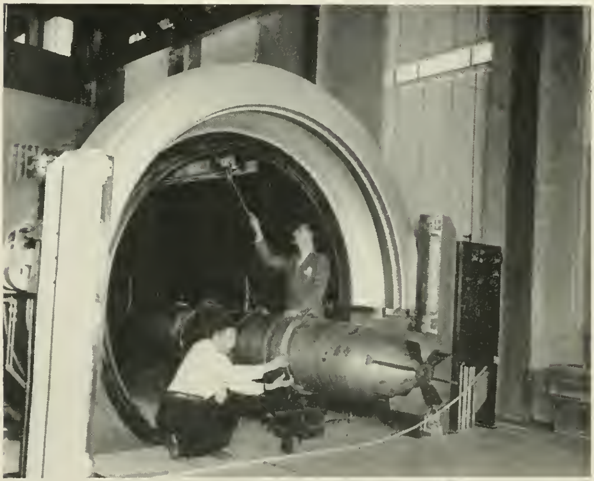

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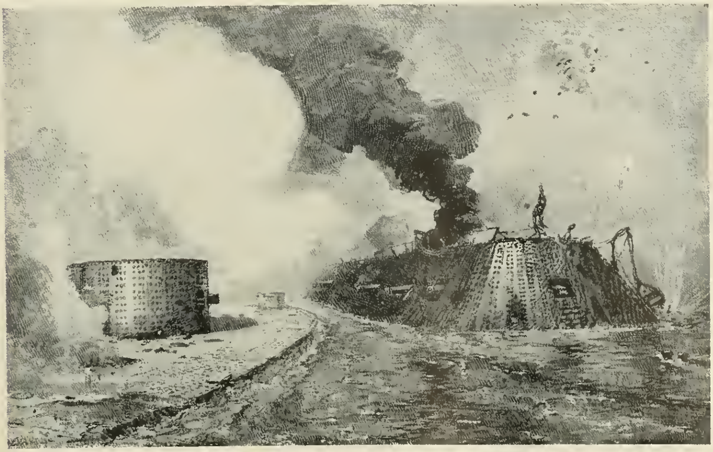
John Ericsson

By CARLETON A. JOHANSON

EDITOR'S NOTE: In the November *Pacific Marine Review* we published a history of the Todd Shipyards Corporation wherein it was recorded that John Ericsson, a great engineer and inventor of a century ago, had teamed up with the DeLameters in their shipyard which was the forerunner of Todd's of today. Readers of this article in different parts of the country wrote us to point out the Swedish origin of Ericsson and to Sweden's pride in his achievements. His building of the *Monitor,* and its defense against the *Merrimac,* which in the Civil War threatened to sweep the ships of the North from the seas, was one turning point in the war. Carlton A. Johanson of Doremus & Company, San Francisco, undertook to provide some details regarding Ericsson, of whom both Sweden and America can well be proud. And so, certainly, can Todd's.

John Ericsson

ALTHOUGH John Ericsson lived for twelve years in England before coming to America, he was born in Vermland, Sweden, on July 31, 1803. Son of a well-educated mine-owner and inspector, Ericsson took an early interest in drawing and making models of mine equipment. In the depression brought on by the Swedish-Russian war of 1811, his father lost his property and became an engineer for the Gota Canal project. At 13 John was appointed a cadet in the corps of mechanical engineers for the canal and proved a brilliant student, particularly in mechanical drawing. He left the corps at 17 to join the Army, where he acquired the knowledge of artillery and ballistics that was to be so important in later life. He obtained leave from the Army in 1826 to go to England to work on his "flame engine" where steam was not utilized and the power came directly from the flame. His next 12 years were spent working on improvements to steam engines, and in designing


Battle between the "Monitor" and "Merrimac," Hampton Roads, Virginia, March 9, 1862.

and building a steam locomotive, the *Novelty,* which in competition with Stephenson's *Rocket* did a mile in 56 seconds.

Contrary to popular opinion, John Ericsson did not invent the screw propeller—its principles and design were known to the ancients. But he did design—and built—the first vessels employing the screw propeller. In 1839, the *Robert F. Stockton,* with an engine designed by Ericsson and acknowledged the first direct-acting screw propeller engine ever built, crossed the Atlantic under sail, and was employed for thirty years thereafter as a steam tug on the Delaware River. That same year, Ericsson pulled up stakes and went to America, soon to apply direct-acting screw propulsion to the United States Naval war vessel *Princeton.*

In a paper read before the Naval Institute by Admiral Luce in 1876, we find "The *Monitor* was the crystalization of forty centuries of thought on attack and defense, and exhibited in a singular manner the old Norse Element of the American Navy; Ericsson (Swedish, *son of Eric*) built her; Dahlgren (Swedish, *branch of a valley*) armed her; and Worden (Swedish, *worthy*) fought her. How the ancient skalds would have struck their wild harps in hearing such names in such heroic verse."

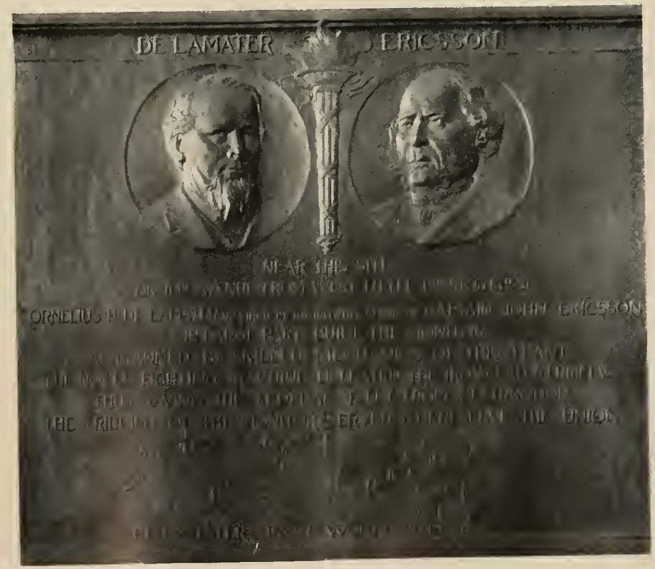
I think the Admiral let himself go on the forty centuries reference, but he was right about the Swedish participation.

How many of our "cost-plus-fixed-fee" shipbuilders of World Wars I and II would have agreed to build the *Monitor* under the terms of the contract that were reluctantly offered Ericsson and his associates despite the gravity of the national emergency?

The Navy was really tough in those days. In the event the *Monitor* did not perform as her designer had promised, and in case any stipulations about invulnerability were not met under conditions of actual combat, the builders agreed to return to the government all funds advanced during the progress of the work. Commodore Smith of the Bureau of Yards and Docks for the Navy Department wrote before construction started, "So soon as the vessel is ready for service the Government will send her on the coast and put her before the enemy's batteries in the service for which you intend her . . . the Government cannot consent to receive the vessel until she has been tested in the manner proposed." In fact, out of a total contract price of $275,000, the final $68,750 was not paid until a week after the *Monitor* had met the *Merrimac.*

John Ericsson had complete faith in his *Monitor,* something not shared by his associates in the venture. In his own words, it represented the culmination of forty years of thinking. When approached by C. S. Bushnell, who became one of his associates, for advice as to the design of an iron-clad floating battery, Ericsson produced the designs and plans of the *Monitor* which he had offered seven years previously to Napoleon III for use against the Russians. The invention, although too late for that conflict, was ready when history called.

On March 8, 1889, one day before the 27th anniversary of the battle of Hampton Roads, John Ericsson died. The following year at the request of the Swedish Government, his body was returned to his native land aboard the cruiser *Baltimore,* of the new steel navy he had the leading part in developing.



The inscription on this plaque reads as follows:

"Near this site on 10th Avenue from West Little 12th St. to 14th St., Cornelius H. DeLamater, inspired by the inventive genius of Captain John Ericsson, in large part built the Monitor as manned by skilled mechanics of this plant. The novel fighting machine defeated the iron-clad Merrimac, thus saving the Federal Fleet from destruction. The triumph of the Monitor served to preserve the Union.

DeLamater Iron Works
1849 - 1889"

DeLamater Iron Works is a predecessor company of Todd Shipyards Corporation.

M. V. "Wanstead"

(Continued from December issue)

Editor's Note: The drawings and general construction detail for the series of ships known as the *Wanstead* class, under construction in England were published in the December Pacific Marine Review. This article describes the machinery and machinery arrangement.

Heralded as something new in British shipbuilding, the vessels described may indicate a changing theory of ship arrangements. The plans as presented here will merit the attention of both builders and operators.

THE *Wanstead* and her sister ships have been built to operate at about 15 knots, when loaded with 8,300 tons deadweight on a mean draught of about 25 feet. To secure this speed a solid high-tensile bronze, four-bladed propeller, with a diameter of 17 ft. 6 ins., and a mean pitch of 14 ft. 6 ins. is fitted to the propeller shaft. The shaft in turn is driven by a 5-cylinder Doxford single-acting, two-cycle opposed piston direct reversible oil engine with an output of 6,250 indicated horse-power (equivalent to 5,500 brake horse-power) when turning at 110 revolutions. The mean indicated pressure in the cylinders in service is about 90 lbs. per square inch. Each cylinder is of 670 mm. or 26.38 inches diameter, and 2,320 mm. or 91.34 inches combined stroke. The engine works on the two-cycle principle with airless injection of fuel and at a maximum combustion pressure of 45 atmospheres or 640 lbs. per square inch, with a mean piston speed of about 840 feet per minute.

In some engines of this kind the scavenge air, necessary for all two-cycle engines, is provided by external blowers. In this case there is a scavenge pump which has a cylinder diameter of 1,750 mm. or 68.9 ins, and a stroke of 1,380 mm. or 54.33 ins. It is attached to and driven by the main engine. The main engines for the *Wanstead* and for her sister ships were built by Messrs. Scotts Shipbuilding & Engineering Co. Ltd., of Greenock, a firm well known for many years as shipbuilders as well as marine engineers.

A departure has been made, too, from normal practice in respect to the engine room floor. It is customary in most ships to employ chequered plating throughout, this being portable in way of such pipes, valves, etc., as it may be necessary to inspect for routine or emergency purposes. So far as the *Wanstead* and her sister ships are concerned, however, all the engine room footplates are gridded, except in the way of the control platform. Thus, all the pipes are visible underneath, and these, being painted in distinctive colors, can be readily recognized.

Electricity is used throughout for auxiliary purposes and three diesel driven generators form the power station of the ship. They are all arranged on the port side of the main engine room. They are of Polar Atlas 2-cycle type and 250 Kw. output apiece at 550 r.p.m. Among the important auxiliaries to which they supply curren are the air compressors used for charging the air bottle which in turn starts the engine when the ship is maneuvering. Each of the two air compressors is a two-stag unit and supplies starting air to the cylinders of the mai engine at 600 lbs. per sq. in. pressure. Each compresso has a free air capacity of 145 cu. ft. per minute an requires a 72 h.p. electric motor to drive it. In additio

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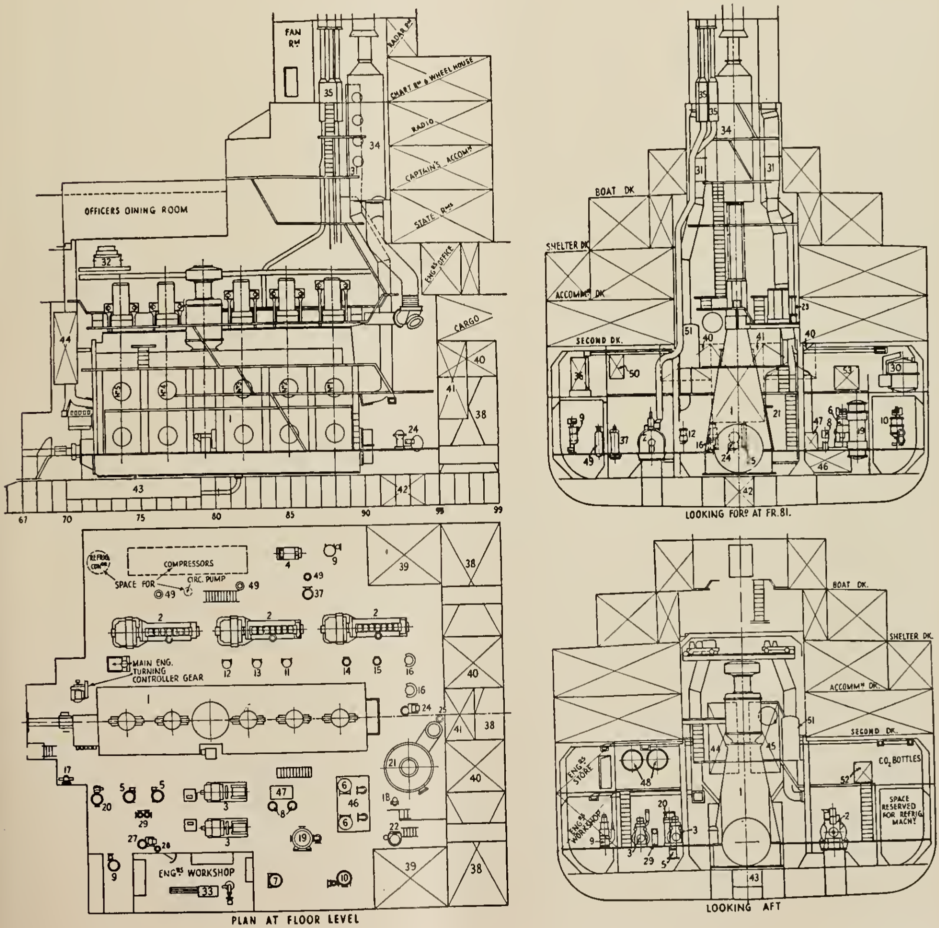
to the main air compressors there is also an emergency air compressor which would be used, for example, if the ship had been temporarily laid up, to charge up air receivers to a sufficient capacity to start one of the main generator engines. This compressor is driven by a heavy oil engine and pumps up the small air bottles. In an emergency it would be employed in the event of all the starting air being lost during maneuvering.

The many pumps required for the operation of the ship are all electrically operated and consist of units for forced lubricating, for fresh water circulation for the main engine, for lubricating oil and fresh water coolers, for ballast purposes, for sanitary purposes in connection with the special "Pneupress" system, whose sanitary pump has a capacity of 7½ tons per hour and is operated by a 7½ h.p. motor. For this system also there is a stand-by pump capable of operating either the sanitary or fresh water system. This too, is of centrifugal self-priming type with a capacity of 7½ tons per hour against a head of 140 feet. The forced lubricating oil pumps are of 55 tons per hour capacity each at 40 lbs. per square inch pressure. They are two in number. There are also two self-priming centrifugal piston and cylinder jacket circulating pumps operating with fresh water and each delivering 250 tons per hour against a head of 45 lbs. per square inch; the motor power in this case is 47 b.h.p. per unit, an identical figure with that required for the centrifugal water pump for circulating the lubricat-

MACHINERY ARRANGEMENT



ing oil and fresh water coolers, the pump delivering about 330 tons of sea water per hour at 30 lbs. per square inch. The ballast pump serves as a stand-by pump for this service and the electrical generator coolers also have a connection from this pump.

The bilge and general service pumps of 100 tons per hour capacity driven by 21 h.p. motors and remotely controlled, draw from the sea, bilge and ballast tanks and discharge to the sanitary tank, deck water service and overboard. They also have connections to the coolers of the generators and to the air compressors.

The ballast pump has a capacity of 330 tons per hour and is driven by a 47 h.p. motor. It draws from the sea, bilge, main pipe line, ballast tanks, and discharges to ballast tanks, overboard, deck water services and is also a stand-by to the sea-water circulating pump.

In addition, electricity is needed for two fuel oil transfer pumps of 30 tons per hour capacity, driven by a 7½ h.p. constant speed motor with remote control. There is a fresh water pump for ship's services and an auxiliary salt water cooling pump, circulating sea water to the auxiliary generator, lubricating and fresh water coolers. There is an auxiliary fresh water cooling pump, for circulating fresh water to the auxiliary engine cylinders and a steam-driven boiler feed pump to feed the waste heat boiler. This latter is an alternative "Nelvin" waste heat or oil-fired unit for working at 100 lbs. per square inch pressure. It is 7 ft. 7 ins. diameter and 16 ft. 9 ins. high and is so arranged that it can be by-passed or partially by-passed by the main engine gases. It supplies steam for ship purposes including heating, and has an evaporation when burning oil of about 3,000 lbs. per hour. It has steam jet oil burning gear.

Other points in connection with the machinery space of the *Wanstead* and her sister ships are as follows: There is an evaporator of 10 tons per day capacity to supply distilled water for engine cooling services and a distiller of 1,000 gallons per day capacity to supply distilled water for engine cooling. All the electrical pumps are supplied with direct current at 220 volts and the motors are constructed to operate in the tropics if necessary. As many as possible have been supplied by the same maker, to make for simplicity of operation and as few sizes as possible are carried to reduce the number of spares carried in the ship.

To facilitate emergency as well as routine repairs a complete workshop has been fitted in position as shown in the plan. It has a center screw-cutting chuck lathe, a drilling machine and a double-wheel bench grinder. It has also a complete set of twist drills and tools for the lathe and ample facilities for storing tools.

Storage tanks for fuel oil are arranged in the double bottom, one settling tank being fitted, the oil passing from the tanks through filters to the main engine fuel pump. The capacity of each oil tank is sufficient for main and auxiliary engines for about 12 hours at service power. The total fuel oil capacity of the ship is 1,000 tons which, at service speed, gives her a radius of about 15,250 sea miles without refueling, this good endurance being, of course, one of the virtues of the modern motor-propelled cargo liner.

The main and auxiliary engines and the exhaust gas boiler discharge their gases into silencers in a guyless funnel of shape as shown in the drawing. It has a powerful modern appearance and reflects up-to-date design in the fact that it is partially functional, i.e. proportioned to suit the appearance of the ship but not completely required for its basic purpose as a funnel. The silencer in the funnel acts as a spark arrester.

Census Bureau to Count Merchant Ship Personnel

Reaching around the world to obtain a full count of the United States population next April, the Bureau of the Census will employ a short questionnaire to enumerate officers and crewmen of all American-documented vessels.

Thorough preparations have been completed to cover every vessel of American registry, whether abroad or in home ports. In reaching the far-flung merchant vessels and their personnel, the Census Bureau will have full cooperation of the Maritime Commission and of all the ship operators.

These questionnaires will be used only in the enumeration of officers and crewmen aboard merchant vessels plying the Great Lakes, coastal waters and the high seas, and those on Naval, Coast Guard, or other government craft. Personnel of fishing craft and of inland waterways vessels will be enumerated by census takers in their home districts. Officers and seamen unemployed or staying at their shore lodgings on April 1, 1950, also will be interviewed by local enumerators.

In general, the type of questions to be asked of ships' personnel will be limited to citizenship, age, marital status, armed forces services, occupation, employment, education, salaries and wages. Census Bureau officials have assured those who must answer these questions that the answers will be used solely for statistical purposes. When an officer or crew member fills in his questionnaire on April 1, 1950, he should seal it immediately. It will not be reopened until it reaches the appropriate tabulating unit of the Census Bureau.

Adequate quantities of the questionnaire will be forwarded to ship operators in time to be delivered by February 1, 1950. Operators will mail appropriate packets of the forms to their ships, which are due to receive them on or before March 1. On April 1, all ship masters will distribute them to their officers and crew members regardless of whether they are American citizens. All personnel should fill out the forms and return them to the ship masters by April 2. They then will be mailed by the ship masters to the operators so as to insure arrival by May 1. Operators, according to the schedule, will return them to the Census Bureau by June 1, after which they will be tabulated.

On the Ways

New Construction — Reconditioning — Repairs

Boilers in New APL Ships

Installation of the Babcock & Wilcox boilers of the *President Jackson,* first of the new round-the-world ships of the American President Lines of San Francisco, is now under way. The contract calls for six boilers, two for each of the three liners now being built by New York Shipbuilding Corp., Camden, N. J.

The ships, expected to be launched at two-month intervals, beginning in August 1950, will be known as the *Presidents Jackson, Hayes* and *Adams.* New in design, without stack or funnel, the ultra-modern streamlined *President* ships will accommodate 228 passengers each, all one class, and provide a half million cubic feet of cargo space.

These vessels are the V-2000 type, progressively featured in previous issues of *Pacific Marine Review.* They will be 536 feet overall, with a 73-foot beam, and cruise at 19 knots. They will displace 19,000 tons, and their deadweight will be 10,600 tons.

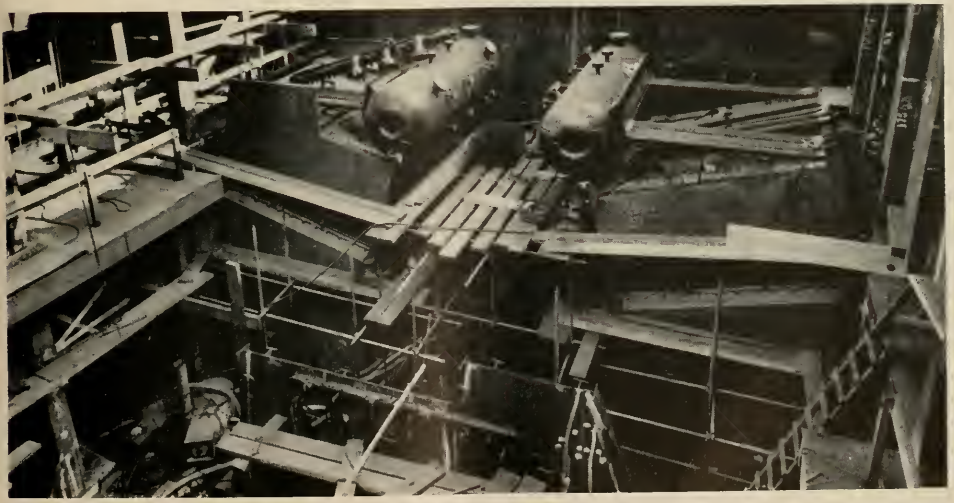
The boilers are B & W water-tube marine boilers of the header type, with water-cooled side and rear walls, soot blowers, convection type super-heaters and air heaters. Each boiler will be fired with four steam atomizing oil burners.

The boilers are designed for 740 psi pressure and will each have a normal steam output of 53,500 lbs. of steam per hour operating at 615 psi, 850 F total temperature at the superheater outlet. The two boilers in each ship will supply steam to a high and low pressure turbine combination connected to a single screw through double reduction gears, developing 12,500 horsepower at 92 r.p.m.

The boilers were designed by the Babcock & Wilcox Company and constructed at its Barberton (Ohio) plant. Certain parts of the boilers are being sub-assembled before final erection is made in the ship. B & W Junior firebrick for the boiler furnaces was made at the company's refractories plant at Augusta, Ga.

More than 4,000 vessels of various classes, for all types of service throughout the world, have been equipped with Babcock & Wilcox marine boilers.

Two sub-assembled boilers, designed and built by The Babcock & Wilcox Company, being installed aboard the American President Lines' ship, S.S. "President Jackson," at the Camden, N. J., yards of New York Shipbuilding Corporation. Fronts of boilers face each other. At center, steam drums show end manhole openings and nozzles along sides for connection of all valves and fittings. At left, lying across drum, is superheater header. At right, steam circular tubes, when laid in place, will lead from uptake header to steam drum. Flat surfaces below drums are upper side wall inner casings, with superheater access panels and lower wall casings, all of which will eventually form outside wall of boiler.



The "Independence" and "Constitution"

The accompanying pictures were taken as the American Export Line's giant liners, *Independence* and *Constitution,* were taking shape in Bethlehem's Quincy yard. These vessels are passenger and cargo ships, P3-S2-DL2, 632 feet long, 89 feet beam and 53 feet draft. Keel for the *Independence* was laid March 29 and for the *Constitution* July 12. The above sizes compare with 608 feet for the *President Cleveland* class and 500 feet for the V-2000 Round-the-world ships.

Power will be furnished by Bethlehem geared turbines of 55,000 horsepower on twin screws.

Together they will cost $46,830,000 with delivery scheduled for late Fall of this year.

Numerous national defense features are embodied in the design to make the *Independence* and the *Constitution* suitable as troop carriers in time of emergency. Estimates indicate a troop capacity of 5,000 men and their equipment.

Nearly $1,000,000 was spent in development work on this new type vessel to assure success when they are placed in transatlantic operation. This sum has been spent in building and testing model rooms built to full scale and completely furnished, in testing various types of equipment, in model basin and wind tunnel tests, and in proving out other design features. Every effort has been made to assure that these new passenger liners will present travelers with the comfort, utility and beauty of modern American living.

The *Constitution* and *Independence* have hulls with clean sweeping lines. The decks of the superstructure are stepped-back at each level. Stem masts and funnels are smartly raked.

The entire promenade deck is devoted to public rooms including a circular observation lounge forward. A completely equipped theatre, two children's playrooms, gymnasium, and electric baths are among the wealth of modern comfort.

The outdoor swimming pool and the recreation area are of distinctive design never before used on an ocean liner. Considerable space has been devoted to this play area because of the extensive use passengers can make of outdoor facilities on crossings via the Southern transatlantic route which the new express liners will follow between New York and the Mediterranean.

Bethelehem Steel Company in collaboration with American Export Lines' technicians designed the hull and technical details of the *Constitution* and sister ship. Henry Dreyfuss designed the interiors.

Like the new "4 Ace" passenger vessels placed in New York-Mediterranean service a year ago by the company the new *Constitution* and *Independence* will be completely air conditioned. Every stateroom and public room, all crew quarters and all crew working spaces on the eight decks will thus be protected from the vagaries of temperature regardless of season or latitude.

President Slater said that his company was the first to cooperate with the U. S. Maritime Commission in building new large passenger liners since the close of the war and was likewise first following passage of the Merchant Marine Act of 1936 to start modernizing its cargo fleet. The company presently owns 24 vessels engaged in an essential trade route service between U. S. North Atlantic ports and the Mediterranean, North Africa, Black Sea, Red Sea, India, Pakistan, Ceylon and Burma.

The Company also operates the S.S. *LaGuardia* in the Mediterranean passenger run and acts as agents for the Italian Line M.V. *Vulcania* and *Saturnia.*

▶

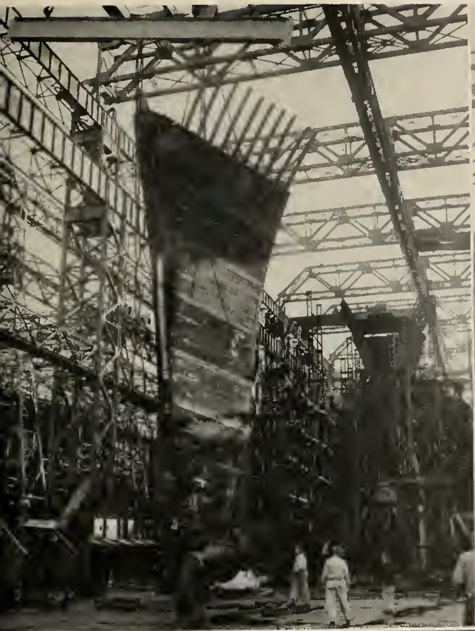
The pictures on the opposite page show one of the largest prefabricated bow assemblies ever made for an American merchantman, recently installed on the luxury liner S.S. "Independence," now under construction for the American Export Lines at Bethlehem Steel Company's Quincy, Mass., shipyard.

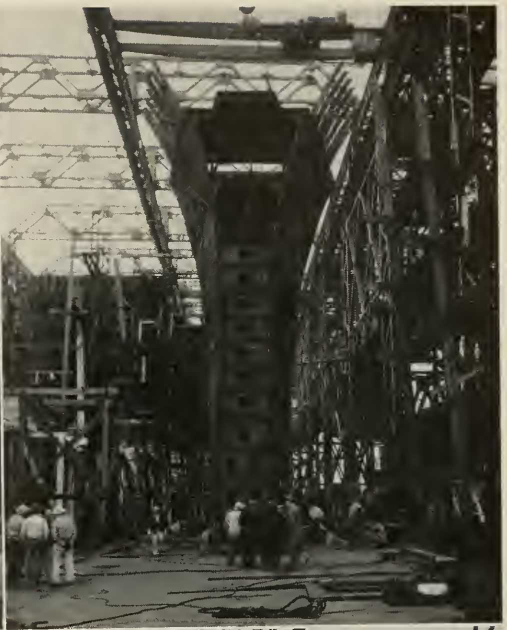
Upper left: The section in the foreground is the forward piece of the lower bow subassembly. In the background can be seen the after piece already set in place. The two pieces were built as a unit on the assembling ways and then separated for installation. The unit weighs 142 tons and has a height of 54 feet, width of 38 feet and depth of 45 feet.

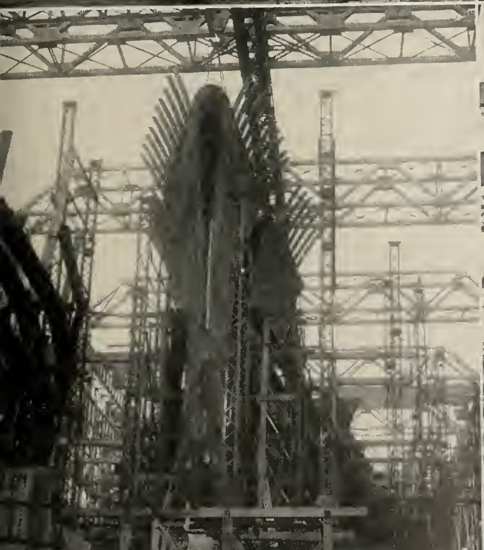
Upper right: The section shown here is the after piece of the lower bow subassembly and weighs 80 tons alone, with a height of 54 feet, width of 24 feet and depth of 20 feet.

Lower left and right: The two bow sections approaching final assembly.

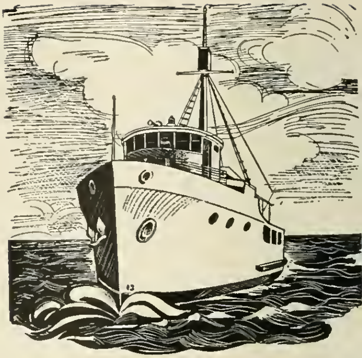
A sister-ship, "Constitution", is also under construction at the yard. The liners will give the United States two of the fastest and largest passenger vessels afloat. They will have accommodations for about 1,000 passengers each.







Coast Commercial Craft



Two More Radar-Controlled Fish Patrol Boats

The California Fish and Game Commission has completed two more patrol boats, to be used in enforcing the game laws off the California coast. They are the *Bluefin* and *Marlin,* converted Naval Aircraft Rescue Vessels (AVR), 63 feet long, 12 feet beam, and 4 feet draft.

Their top speed is about 33 knots with a cruising speed of around 22 knots, being powered by two Hal Scott Defender gas engines. Columbia propellers 23¾ in diameter push these hulls through the water. Mai electric lighting supply is a 24 volt bank of Exide ba teries. In the pilot house along with the General Electr radar is an Ets-Hokin & Galvan 65-watt radiotelephor

The "Marlin" on trial run. The antenna on tripod is shown, as is also the aerial for the radiotelephone.

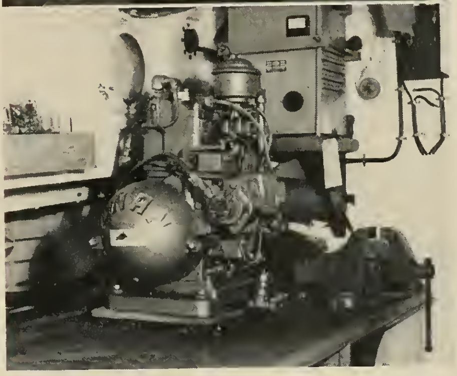
and Submarine Signal Fathometer.

The boats will patrol the coastal area from Morro Bay south to the Mexican border, performing duties similar to those of the *Albacore,* which operates from Morro Bay north to the Oregon line. The *Albacore* was described in the May issue of Pacific Marine Review.

Of major importance in the patrol work are the night operations, where radar plays a new and vital part. Ets-Hokin & Galvan, who are sales agents for General Electric's "Electronic Navigator", made the radar installation. The 2, 6 and 30 mile ranges on the radar will enable the operator to see in darkness and fog from a minimum range of 100 yards to high headlands 30 miles away. Power to operate the "Electronic Navigator" is obtained from a automatic dual Onan electric plant which furnishes 115 volt, 60 cycles A.C. for the radar, and 24 volts D.C. for auxiliary battery charging. The Onan plant maintains frequency to within plus or minus one cycle.

The conversions and the present installations were performed at the Long Beach yards of Fellows & Stewart. Captain L. J. Wesseth, a veteran of 20 years with the California Fish & Game Commission, skippers the *Bluefin,* and N. J. Millen skippers the *Marlin.* Each carries a crew of four.

Antenna for the Electronic Navigator mounted on a tripod mast.



Top: Milton Schug, Manager, Ets-Hokin & Galvan's southern division, and Tom Schilling, Assistant Chief of Patrol, State of California Division of Fish and Game, looking in the compactly arranged scope on the General Electric Electronic Navigator.

Bottom: The Onan electric plant which furnishes AC current for the radar and DC current for battery charging. Ets-Hokin & Galvan is agent for Onan and made the complete installation.

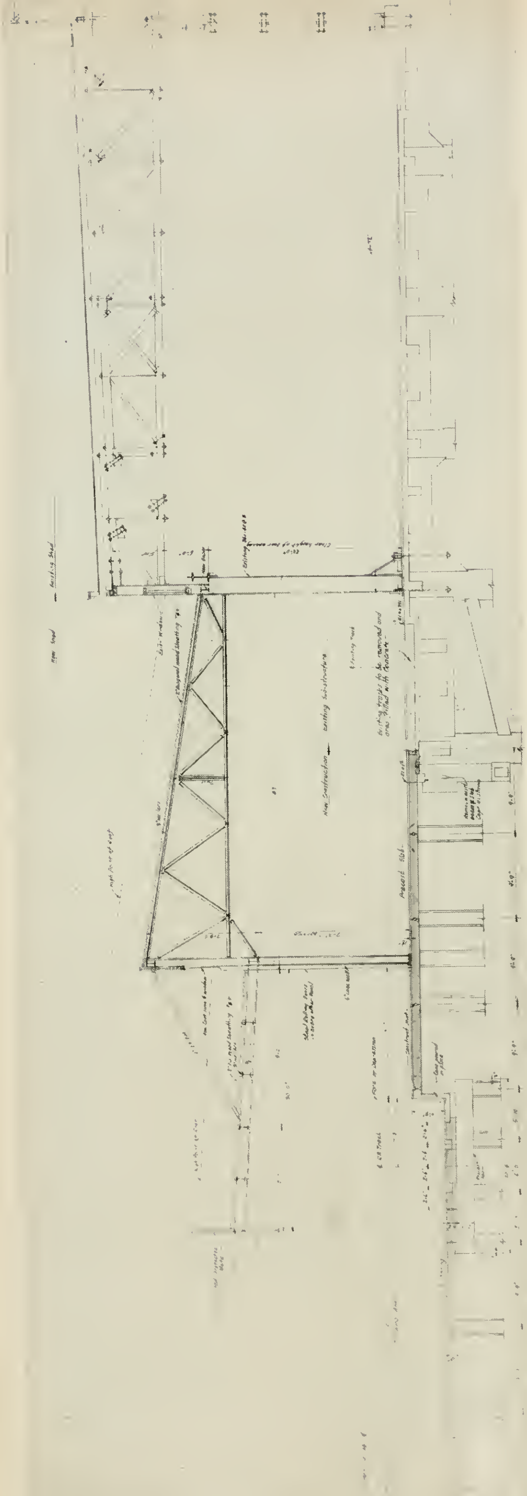
Mobile Battery Chargers for Navy

Two huge mobile battery chargers for submarines, each of which will be installed in a 50-ton railroad boxcar, are now being built for the U. S. Navy by the General Electric Company. One of the units will be sent to the Puget Sound Naval Shipyard at Bremerton, Wash., and the other to Charleston, South Carolina.

The units will be used to charge electric batteries from which submarines draw power for underwater operations. The mobile chargers will be rolled alongside docked submarines and used for recharging the batteries from shore power sources.

The new battery chargers will be mounted in special 60-foot boxcars. Each car will hold a three-unit motor-generator set and two two-unit motor generator sets. This equipment will convert the 2300-volt alternating current available at the charging stations into the lower-voltage, direct current needed to recharge the submarine's batteries and to provide current for the submarine's lighting system and general electric power needs while it is in port.

The equipment will be completed and shipped next April.



Matson's New Quay Type Piers

THE need for modernized pier and cargo h facilities is at last being recognized and certai are doing something about it. Reference is made address of Frazer Bailey at the annual meeting Naval Architects and Marine Engineers at New November, which address is published in full issue. Bailey is president of the National Feder American Shipping and was formerly president son Navigation Company.

Modern piers are being constructed in San F and Los Angeles for Matson and in Los Ang American President Lines. The Matson Los Ange was reported in the October *Pacific Marine Revie*

The San Francisco pier is diagrammed on thes At a cost of a million dollars the Board of State Commissioners will convert piers 30 and 32 i quay type pier, and Port Manager Wylie expe bids will be called for this month, with con within twelve months.

The engineering sketches call for a depresse section of 150,000 square feet between the prese piers. This will allow tail gate truck delivery an tate rail car operations and general cargo handli

The area will be formed by filling in the s tween the present piers, which will become pa structure.

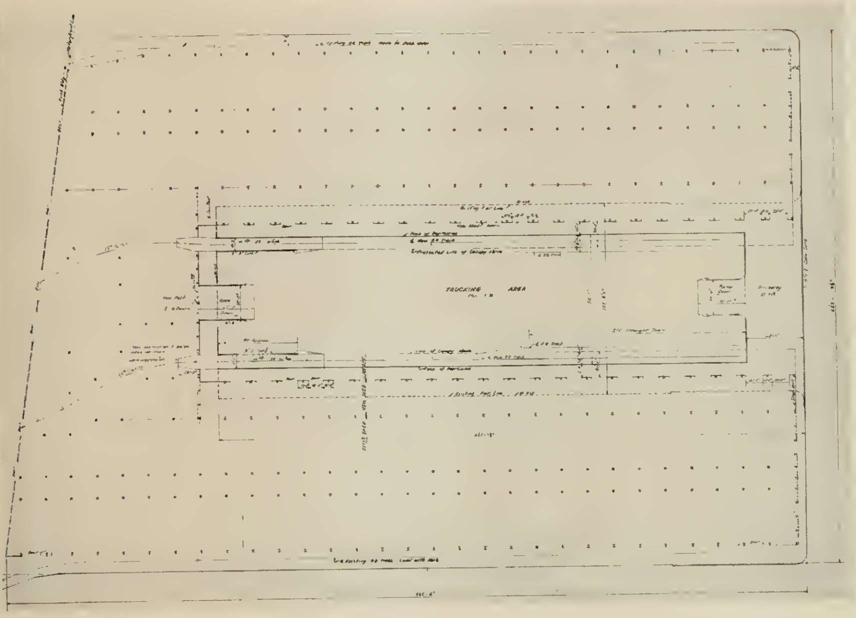
By widening the present pier sheds 50 feet, e will be capable of assembling a complete cargo tory and C-3 type ships.

Construction of the project has been made po the agreement of Matson Navigation Co. to facility for 15 years. The company has long the piers.

Completion of the quay type pier will increase efficiency through elimination of the bottleneck flicting traffic and loading operations which is to the finger type pier.

The sketch on page 60 shows, right, the existi center, the new shed in the floor of which ap present railroad tracks, now to be removed, and canopy over new depressed tracks; and at le picture the new paved trucking area which will center of the combined pier.

The sketch on page 61 shows the entire new pier with the depressed trucking area in the mic



ramps to and from street level.

The entire width of the pier will be 622 feet, accommodating ships on both sides and end.

The improvement is one of a series of efforts being made to regain for San Francisco cargo which has been lost to Gulf and other ports.

The Captain—and Shipboard Morale

(Continued from page 43)

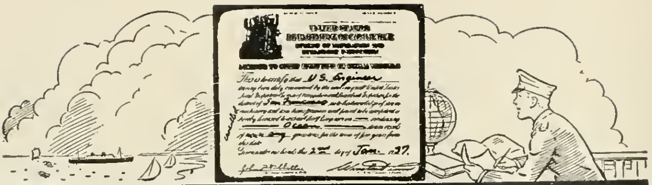
beginning of each voyage; with the caution that any conduct approaching scandal, notoriety or passenger annoyance, will terminate that privilege immediately and bring upon the offender's head the full weight of punishment prescribed by law, *with no exceptions.*

Taking sides with deck officers at the expense of engineers, pursers and officers of the steward's department is one sure way to foster noncooperation among these groups. It is much better to let all officers see that their skipper is absolutely impartial in this regard. It is so easy, for example, to point out to a third mate that if he believes he is more important than a third assistant engineer he should try doing the third assistant's work. Period! At the same time, it is wise to arrange matters on board so that comparative ranks in the various departments have as many chances for close association as it is possible to devise. A second mate and a second assistant engineer, being on the same watch, should certainly get to know each other if the ship's operation during the period of their joint duty is something to be desired. One good way to get all these gentlemen together is to junk the clique-producing, ancient custom of seating officers at separate tables in the messroom—separated according to departments—and to seat them, instead, so that the departments are mixed so thoroughly that an engineer is surrounded by deck officers who, in turn, are surrounded by engineers, pursers, steward and radio operator. *This works wonders*—it cannot be stressed too strongly—*it works wonders.* And at the master's table should be seated the chief engineer, chief mate and first assistant engineer—one solid block of authority, in close harmony, for all to see.

On a ship where the officers' messroom has two long tables, the splitting of deck and engine room personnel is usually as complete as possible; all engine room officers at one table and the captain and deck officers at another. Here, indeed, are two armed camps within insult range of each other but outside the range of whispers. What a set-up for discord on a long voyage! Far, far better to re-seat all hands so that one table becomes a senior table and the other the junior table. Seat all hands according to rank with the engine, deck, purser, steward and radio personnel completely intermingled. If the tables have an end seat which can be spared, leave that seat vacant and reserve it for the day-long occupancy of whoever has a birthday, wedding anniversary, etc.—making that officer "kingpin" on his day.

Another worthwhile routine is for the master to invite to his cabin one officer at a time—in complete rotation of all officers for a rag-chewing or game of cribbage, etc. In this way a skipper can keep his hand

(Please turn to page 79)



Your Problems Answered

by "The Chief"

"The Chief's" department welcomes questions—Just write "The Chief," Pacific Marine Review.

New Screw Thread Standards

THE modern fast freighter S. S. *Marine Reviewer* was held up four hours at Colon waiting her turn to make the passage of the Panama Canal. Frank Farran was not too much bothered by the delay as she had a clean bottom and more than enough excess power to speed up to 20 knots and insure an early morning arrival at San Pedro. The gland steam was open, the vacuum up and the turbines warm ready for a quick start. The The regular sea watch was standing but with little to do.

As Chief Engineer, Farran had many responsibilities and problems. He wondered whether he had made a mistake in taking on so much fuel oil at New York because he would have so much of it left when the tied up in California. He propped his feet up on th desk of his rather well appointed office-stateroom.

A knock on the open door was followed by the rumbling bass voice of Fred (Mac) McCoy, the Irish Firs Assistant.

"Say, Chief, I just now was aboard the British freighte tied up to the dock in Colon. Just this minute got ou of the dirty old taxi boat. He charged me a dollar t make the trip to our anchorage here. You know, then Limeys still got ships burning coal? I don't believe w could hire a coal burning fireman for our ships, do you?

"Hello, Mac, the Chief responded. "Don't underestimate the Englishman. By and large they are better mechanics and business men than the Americans. There i only one thing in which they fall short; that is they hav underestimated us for a hundred and fifty years. The srill disdain our fast production lines and take pride i their very finely finished hand worked and fitted machines."

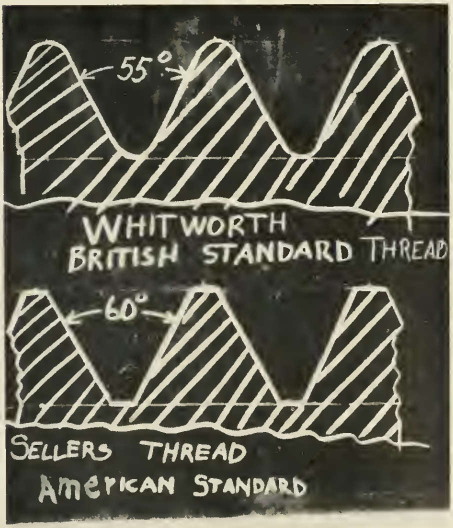
Mac continued after carefully seating himself on th high stool at the large high blue-print table. "You know Frank, the Chief was griping about the Britishers havin to change all their bolts and nut standards together wit the machine tools, taps and dies and all, to match th American standards. How come they have to do this They use the inch like we do and it is the same inc ain't it?"

"Yes, it is the same dimension unit all right but th shape of the threads are just enough different to make i difficult to use a British nut on an American bolt eve when the diameters, pitch of thread and direction c screw are the same."

Mac's interest was aroused and with some Englis ancestry he was determined to defend their rights. "Bu for the love of Mike, why do the Limeys change at all— who makes them, and what brings this all up now wit 200 years behind it?"

Farran saw that this was a chance to carry on the educational program another small step and settled bac

Top: Figure 1
Bottom: Figure 2



for a long talk. By this time young George Cambell had dropped in with his usual book, pencil and paper. He loved to listen to one of Farran's lectures.

"Well, it seems that over a hundred and twenty-five years ago a Britisher by the name of Sir Joseph Whitworth who was a genius at mechanical things was sick of all the different threads used in England. Each manufacturer had his pet standards and the parts of his machine would fit no other make. It took over a quarter of a century of effort before England adopted as standard by law the thread design suggested by Sir Joseph." Taking young George Cambell's pencil and pad, Farran sketched rapidly. (Fig. 1).

McCoy started talking. "I can't see what you are writing upside down like this. Why don't you have a blackboard for use if we are going to be in school. Begory that's a good idea from me. I'll get one in Los Angeles when we get in. About 30 by 48 inches she'll be. And that I will do."

"Oh, swell, Mr. McCoy. I will help you mount it in this office. I hope Mr. Farran will let us. We will hang it and not screw it to the bulkhead."

"Look, son," Farran was smiling but serious. "You will hang nothing in this room or on this ship. This is a deep sea ship and she takes wave and swell in stride with nothing banging and bumping around. And for that suggestion you are hereby assigned to the job of screwing or bolting the blackboard to the bulkhead yourself and doing a good craftsmanlike job."

"I guess that settles that." McCoy burst out laughing at poor George's landlubber's mistake.

Farran continued. "Note that the Whitworth thread had a 55° slope to the sides and well rounded fillets at the bottom and well rounded top angles. The fillet at the bottom added strength as a sharp angle here would greatly weaken the bolt or screw. The rounded top had little merit except to prevent cutting things that may contact the threads such as the soft hands of an apprentice. Of course, the top rounds permitted a fillet in the nut, which added strength there, but strength in the nut is already more than in the screw anyway, because of its shape and thickness."

"But, Mr. Farran," George Cambell asked, "Why isn't strength in the female thread needed just as it is in the male thread to prevent stripping the thread from the metal bolt."

"Wait a minute." Farran studied the sketch. "George is right. I will have to use the old excuse that an instructor used during the war. This was at the Marin Shipbuilding yards, in San Francisco Bay area. He knew his alternating current electricity from Z to A but would once in a while make a really terrible mistake. When caught he would say that he was only testing us to see if we were alert. If no one caught it, he would refer back to that point again with a funny look in his face and we all would object right away. And so for a fillet in the female thread, we need a round top on the male, and for a fillet on the male thread we need a round top on the female thread."

Farran continued: "It took two world wars and some years besides to get the English speaking countries of the world to realize that there must be a combination American British Canadian (ABC) thread standard. You see, back in the sailing ship days the United States was of little world consequence and the thread standard designed by a Pennsylvania Dutch mechanic by the name of William Sellers and adopted by Congress meant nothing to the British. Here is the Sellers American standard thread. (Fig. 2). Note the flat top and bottom and the 60° angle of the side.

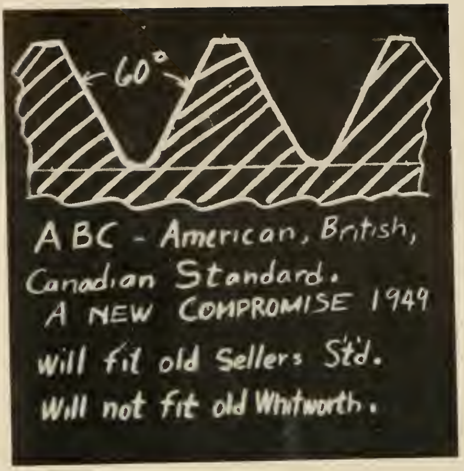

60°
ABC - American, British, Canadian Standard.
A NEW COMPROMISE 1949
will fit old Sellers Std.
Will not fit old Whitworth.

Figure 3

"Even back in 1919 after the first World War a conference was held to avoid the terrific penalty of two thread standards on war material. Nothing happened. Again in 1926 a world conference tried to settle the standard. There were arguments on both sides and the conferences were a maze of engineers discussing geometry and strength of materials.

"Poor Canada trading with both England and the United States was hit harder, and was the spark plug which brought together still another conference in 1948. This time the conferees were instructed to stay with it until the problem was settled. Millions of dollars were at stake in changing machine tools and all. So finally, in order to be home for Christmas, they compromised, and both would have to change tools and dies to a new standard.

"Here is the new standard." Farran pointed to the sketch. (Fig. 3). "Note that the new ABC standard has the Whitworth fillet at the bottom but the Sellers flat top. The 60° angle does not impose quite as much radial load on the nut but makes the thread a little narrower across the bottom. However, I believe that nuts stretch and strip long before the thread breaks off at the root. Also the U. S. standard (Sellers) greater angle, having less radial component of the load, will be a little easier to turn as the metal to metal contact pressure is less for a given axial load."

"An Irish victory for the Limeys if I ever saw one," said McCoy. "Both sides lose."

"Well, yes and no," Farran continued. "You see, the

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Pacific WORLD TRADE

Reg. U. S. Pat. Off.

Better Money
The Next Step in World Recovery

Summary of Recommendations of International Chamber of Commerce

Devaluation has come. It remains now to assess the consequences of devaluation and to prescribe the additional things which must be done if its potential advantages are to be realized in fact.

The United States Council of the International Chamber of Commerce presents the following conclusions and recommendations:

1—Devaluation alone will not appreciably narrow the dollar gap and may serve to widen it in the short run.

2—The basic requirements of the situation remain unaltered in the United Kingdom and other countries which have devalued. What is needed in these countries is more productivity on the part of the worker, more enterprise on the part of the producer and exporter, more incentives for business, and fewer restraints and controls on the part of governments.

3—The U. S. Council recommends that a constructive reorganization of the British war-created debt, now represented by blocked sterling balances, be undertaken immediately. This would be a major factor in justification of further ERP aid.

4—The U. S. Council declares its full support of effective measures for expanding purchases by the United States of foreign goods and services. Imports should and can be increased by further reductions in tariffs under the Trade Agreements Program, reforms in customs procedure, and prudent stockpiling on the part of the United States and better merchandising methods on the part of foreign producers.

5—The U. S. Council reaffirms its views on stimulating United States investments aboard as set forth in its report *"Intelligent International Investment"* and renews its endorsement of the *"Code of Fair Treatment for Foreign Investments"* put forward by the International Chamber of Commerce.

6—The U. S. Council rejects the notion widely current since devaluation that the United States will take unilateral action to increase the price of gold and is convinced that such action is neither probable nor possible. The Council also rejects categorically the idea that an increase in the dollar price of gold would be a desirable means of closing the dollar gap.

7—The U. S. Council points to the great progress made by most European countries in restoring production to prewar levels and above, often despite monetary instability. *It believes the next essential step is to strengthen European currencies in order to revive confidence, stop inflation, and provide new incentives to workers and producers.* Devaluation sets the stage for removing exchange controls, enlarging the area of free transferability of sterling particularly, and thus moving toward convertibility. But the opportunity must be seized quickly if it is not to be lost.

8—Some substitute will have to be found, and found soon, for the export financing provided by the European Recovery Program. In the meantime, the Council applauds the statement of the Economic Cooperation Administration that it will allocate ECA funds in the future on the basis of performance rather than on the basis o calculated need.

9—Dollars unassisted cannot restore the world and make it prosperous. Free and stable currencies will go far to loose the forces of free competitive enterprise which alone can do the job.

Indonesia's Trading Future

The National Foreign Trade Council has made publi the following observations on Indonesia:

"Establishment of the Republic of the United States o Indonesia as an independent and sovereign partner i the new Netherlands Indonesian Union arouses attentio to the importance to world trade of the resources o Indonesia, the promise which exists for economic devel opment in that country under favorable circumstances, and the significance of Indonesia to American foreign trade and investment.

"Creation of favorable circumstances, it is recognized, poses many problems, among the most urgent being the reorganization of the Indonesian civil administration and the intiation of long-term programs for training administrative personnel.

"From the standpoint of potential effects on American investments as well as on trade prospects, Committees of the National Foreign Trade Council are studying the agreements by which sovereignty has been transferred from The Netherlands to the United States of Indonesia, particularly the Financial and Economic Agreement attached to the Union Statute. Continuing attention will be given to the measures taken to carry out these agreements.

"The extent to which Indonesian foreign trade is encouraged on a competitive basis, the extent to which Dutch and other foreign personnel are attracted and utilized, and the degree of protection and encouragement offered to existing foreign investments in Indonesia, will greatly affect the views of prospective United States traders and investors.

"In urging the desirability of soundly conceived assistance to Indonesia, National Foreign Trade Council stresses the importance of timely and positive action by the governments concerned for accelerating economic production and well-being through measures to protect and foster the role of private enterprise.

"National Foreign Trade Council has held initial meetings of members, and has discussed the economic future of Indonesia with U. S. Government representatives.

"It is the desire of National Foreign Trade Council to assist in all appropriate ways in building mutually beneficial and expanding commercial relations between the United States and Indonesia."

Oakland Foreign Trade and Harbor Club

The annual Spanish night saw Richard H. Steuben installed as president for the 22nd year of the Oakland Foreign Trade and Harbor Club. The ceremonies were held January 12 at the Claremont Hotel, Berkeley. Raymond B. Giles was installed as vice president; Frank McCarthy, treasurer; and Lyford Morris, secretary. Steuben is president of Cutter Laboratories, International; Giles is sales manager for the Pacific Coast Engineering Company; McCarthy is with the Central Bank of Oakland; and Morris (note this) is with the Prudential Insurance Company.

Directors, in addition to Steuben and Giles, are William J. Gleason, export manager, Kaiser Steel Corporation; Jack O. Grounds, Pan American World Airways; Frank B. Howland, manager, Oceanic Forwarding Company; Arlie A. Johanson, district freight agent, Pacific Transport Lines; William L. Milwee, export manager, Berkeley Pump Company.

Packard Marine Engines Included in Boat Order For Belgian Congo

Packard Motor Car Company has shipped Packard Marine Engines to Churchward and Co., Inc., makers of Steelcraft boats, as part of a $100,000 government order for the Belgian Congo.

Frank J. Hoder, manager of Packard's marine engine department, said that 23 of the six-cylinder, 100 horsepower engines are being installed in 16 Steelcraft Sedan and Holiday cruisers. Three spare engines were included in the contract.

Hoder said that the boats, of which seven are twin screw units and nine are single screw, are being used as patrol craft for the harbor and river police in and around the Port of Matadi in Belgian Congo.

The contract for the boats and equipment was awarded by the Belgian Consulate General in New York after negotiations which required several months. Final shipment by Steelcraft was made on October 15.

The boats, powered by Packard marine engines equipped with 2 to 1 reduction gears, develop a top speed of 18 m.p.h. for single screw units and 26 m.p.h. for twin installations.

Exporters' Directory Listing

More than 1,200 small business firms registered with the Chicago office of the U. S. Department of Commerce for listing in the Exporters' Directory, to be published by the Economic Cooperation Administration. Of the total, some 800 forms were filed by Chicago firms. The Milwaukee office received 167 applications, with 62 from Milwaukee.

Export Managers' New Officers

Charles McKeever of General Petroleum Corporation has been elected president of the Export Managers' Association of San Francisco for 1950. He will succeed Arthur E. Ojeda of the Standard Oil Company of California.

Other new officers elected at the association's December 13 meeting are: vice president, Gordon Graham, export manager of Avoset Company; secretary, Charles M. Freeman, of Tidewater Associated Oil Company; treasurer, Roy Norton of the Shell Oil Company.

The new officers were honored at a Christmas party on December 16 at the Lamps of China restaurant.

The Export Managers' Association is comprised of export managers of manufacturing firms in San Francisco.

World Trade Association Elects 1950 Officers

Ralph V. Dewey, 1950 president of World Trade Association.

Ralph V. Dewey has been elected 1950 president of the World Trade Association of the San Francisco Chamber of Commerce to succeed G. A. Gumbrecht, 1949 president.

Dewey is vice president of Marsman Company of California and served last year as first vice president of the association.

Commenting on world trade for the coming year, Dewey said, "The outlook for 1950, in and out of San Francisco, is naturally conditioned by the varied aspects of the international situation. However, the World Trade Association of the San Francisco Chamber of Commerce will make every effort to maintain and further increase the world demand for American goods and San Francisco's vital part in the world trade picture."

Other officers elected for the coming year are: First vice president, Victor B. Smith, export manager, Sperry Flour Company; second vice president, W. I. Nelson, treasurer, Frazar & Hansen, Ltd.; third vice president, T. R. Jamieson, president, Otis, McAllister & Co. Robert Taylor, assistant manager, foreign department and assistant vice president, American Trust Company, was reelected treasurer of the association and Alvin C. Eichholz, manager of the World Trade Department of the San Francisco Chamber of Commerce, was re-elected secretary-manager.

Named to the executive committee of the association were: H. Alvarez, manager, export division, Golden State Company, Ltd.; Victor L. Arenth, foreign freight agent, Southern Pacific Company; F. E. Brookman, partner, Atkins, Kroll and Company; Windsor A. Brown, marine insurance underwriter, Balfour, Guthrie & Co., Ltd.; L. G. Dunn, freight traffic manager, Pacific Far East Line, Inc.; Fred B. Galbreath, manager, Marine Office of America; Gordon Graham, export manager, Avoset Incorporated; Frank B. Howland, manager, Oceanic Forwarding Company; Howard Hutchins, assistant vice president and manager, foreign department, The Bank of California, N. A.; John J. Jacobs, traffic manager, Isthmian Steamship Co.; E. R. Knauf, export sales manager, Crown Willamette Paper Co.; Arthur P. Lazarus, vice president, Getz Bros. & Co.; J. J. Lermen, Jr., export manager, Tide Water Associated Oil Company; A. D. Levis, secretary-treasurer, Connell Bros. Company, Ltd.; Ira S. Lillick, admiralty attorney, Lillick, Geary, Olson, Adams, & Charles; M. W. Melander, export manager, Stauffer Chemical Company; A. E. Ojeda, special representative, foreign trade department, Standard Oil Company of California; Ray C. Robinson, Sr., customs broker, Harper, Robinson & Co.; W. Kenneth Varcoe, vice president, freight traffic, American President Lines, Ltd.

Export Credit Information On Latin American Countries

The following is an excerpt from a release of the Federal Reserve Bank of New York dated December 17, 1949:

"Export collections in Latin America improved during November. The aggregate dollar volume of outstanding draft indebtedness reported by 15 banks at the end of November declined 4.0 million dollars to 177.4 million, the lowest level since last May. The reported total number of collections paid during the month was larger than the October total by 899 items, or 5%.

"The decline in the draft indebtedness of Brazil (which represents the bulk of the decline for all Latin America) amounted to 3.3 million dollars in November and reduced Brazil's outstanding draft collection debt from an October high of 118.1 million to 114.8 million dollars. Peru reduced its outstanding draft indebtedness 0.5 million dollars. The dollar volume of export drafts outstanding against Chile and Uruguay also declined and are currently at the lowest levels since the series began in May 1947. Cuba and Venezuela, on the other hand, showed increases in the dollar amount of collections outstanding—accompanied, however, by increases in the total number of drafts paid and continued high percentages of payments made promptly.

"The downward trend in the volume of outstanding confirmed letters of credit, which was temporarily interrupted in October, was resumed in November with a drop of 8.3 million dollars, which carried the total to 118.8 million, the lowest level on record."

ECA

– What it is doing
– What it means to you

INDUSTRIAL PRODUCTION

Total output in the participating countries in September was up to 118% of the 1938 average. Production during the third quarter of 1949 was 11% above production during the same period of 1948. This represents somewhat of a slackening in the rate of increase, since output during the first half of 1949 was 14.5% above that of 1948.

PRICES

Prices in Western European countries have so far remained stable following devaluation, due partly to government regulations requiring accumulated stocks to be sold at predevaluation levels. Long-range effects are not yet evident.

WHO SUPPLIES THE GOODS

Commodity authorizations to Europe through November 30, 1949:

United States	67.2%
Canada	14.3%
Latin America	10.7%
Participating European Countries	2.8%
Other countries	5.0%
Total	$7.0 billions

COMMODITIES FROM THE U. S.

Procurement authorizations as of Nov. 30, 1949:

	Millions of dollars
Cotton	776
Machinery	771
Bread Grains	709
Tobacco	259
Petroleum	231
Coarse grains	227
Fats and Oils	218
Iron and Steel Mill Products	192
Chemicals	186
Coal	183
Motor Vehicles	159
Nonferrous metals	114
Dairy products	100
Total	$4.7 billions

KOREAN PROGRAM AUTHORIZATIONS THROUGH NOVEMBER 30, 1949

	Millions of dollars
Fertilizer	11.1
Bread Grains	4.7
Raw Cotton	3.9
Coal	7.1
Vehicles and Machinery	3.9
Iron and Steel Mill Products	3.4
Petroleum and Products	2.9
Technical Services	1.6
Ocean Freight	8.8
Other	5.6

SOME RECENT ECA PROCUREMENT AUTHORIZATIONS:

Commodity	*Countries and Amounts* (See code below)
Cotton linters, raw	FR 250; AU 3,600; NE 8,700; DE 1,300; TriGer 40,000; GR 1,400
Inedible egg yolk	TriGer 75
Vessels and equip. (except ocean going)	FR 640
Railroad transp. equip. and parts	FR 500; UK 25
Lumber and sawmill prod. and lumber mfrs.	NO 60; NO 200; AU 45
Seeds other than oilseeds	AU 200
Indus. machinery, incl. office machines, appliances and parts	GR 2,184; UK 3,000
Crude oil and petroleum prod., except additives	GR 1,350; IT 4,320; BELUX 2,947
Scientific and prof. instr. apparatus and supplies	IT 1,935; TriGer 100; GR 50
Aircraft parts, accessories and ground handling equip.	FR 4,225; IT 200
Specialized oil well drilling and refining equip.	FR 300
Medicinal and pharm. prep.	NE 110; KO 361; AU 540
Motor vehicles, engines and parts	DE 950
Agri. equipment	FR 850
Tractor parts and used wheeltype tractors	FR 475
Tractors, tracklaying type (agric.)	FR 250
Tractors, tracklaying type (non-agric.)	FR 160
Tractors, wheel-type (agric.)	FR 250
Milk, evaporated and condensed	GR 1,060
Tallow and other animal fats and oils	NO 180; NE 170
Chemicals and chemical prep.	AU 875; AU 100; UK 4,580
Industrial chemicals other than alcohol	AU 250; UK 875
Misc. indus. materials and mfd. commod.	AU 120; NO 50

CODE: All amounts shown are in thousands of dollars. Codes for countries above are: AU-Austria; TriGer-Trizone Germany; BELUX-Belgium-Luxembourg; FR-France; GR-Greece; IT-Italy; DE-Denmark; NE-Netherlands; NO-Norway; UK-United Kingdom.

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* World Trade News Supplement, furnished by John J. Judge, Regional Director, U. S. Department of Commerce, San Francisco.

Marine Insurance

Export Packing – Insurer's Viewpoint

By R. BRUCE MILLER*

Marine Secretary, North American Companies

THE importance of packing in the successful exportation of American manufacturers cannot be stressed too much. The American exporter wants to sell as much as he can ship at a profit. The steamship company that carries the merchandise and the insurance company that insures it hope that he will continue to ship in large volume. As an insurer I want my customer, the assured, to compete successfully with his competitor abroad. It would be folly to recommend packing practices that are not economically sound. We cannot afford to have the American exporter outpriced in the highly competitive foreign trade situation that exists today.

MARINE
INSURANCE
★
Cargo, Hulls, Motor Transit,
Parcel Post, Registered Mail
and other
Inland Marine Lines
★
☆ THE HOME ☆
Insurance Company
Home Office: 59 Maiden Lane, New York 8, N. Y.

SAN FRANCISCO
EXbrook 2-5600
565 Clay St.

LOS ANGELES
MIchigan 3661
639 S. Spring St.

MARINE MANAGERS
Clayton E. Roberts
Alberto Martinez, Jr.

During the last year or more we have heard a great many conflicting claims regarding American packing. Some prophets of doom have stated that it has been so bad that many millions of the taxpayers' money has been wasted under the Marshall plan, cargo having arrived in condition unfit for use. I wish I could say that American companies had insured the shipments so that we could deny the assertion unequivocally. As it stands I can only say that I do not believe it from what I have seen in touring the port area of Rotterdam, Antwerp and Havre in 1948 and the ports of Naples and Genoa this summer. I have seen cargo discharging, inspected transit sheds and principal warehouses and talked to cargo surveyors who deal with claims. I saw and heard nothing to support the more extravagant assertions that have been made.

It is only fair to state, however, that conditions have improved materially in European ports and that claims frequency was much higher in 1946 and 1947. But we are discussing conditions as they exist today. On that basis I do not believe that packing in this country can be denounced as generally less satisfactory than that of any other country.

I did see some very poor marking of cases, some badly designed crates that could have been readily improved by stronger skids and the use of diagonal bracing. I observed shipments of fluorescent lamps in cartons that were improperly sealed with ends broken and examples of poor closures on both fibre and light steel drums. The damage did not appear extensive, however, and the packing faults could be corrected at very little expense.

It is true that cargo loss and damage have been exceptionally heavy since the war ended but the loss and damage have not been confined to American export shipments. I have just returned from an international meeting of underwriters and know that pilferage and breakage and rust occurs to shipments made by every country in the world and that these losses have been a matter of just as great concern abroad as they have been here. Packing inferior to that existing prewar has been blamed for much of the loss just as it has here and for the same reasons. Each country has made some effort to adopt remedial measures.

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*This speech was presented before the American Merchant Marine Conference at the Waldorf-Astoria, N. Y., on October 20, 1949.

Since you are competing with British shippers you might like to know a little more about their booklet, compiled by a committee of the London Chamber of Commerce, and the range of interest in improving British packing. The committee that worked on the project comprised the Chamber of Shipping, the Dock and Harbor Authorities Association, the Institute of London Underwriters, Lloyds Underwriters Association, The National Road Transport Association, the National General Export Merchants Group, the Traders Co-ordinating Committee on Transport and the Railway Executive.

This is an imposing list of organizations interested in packing as it affects British exports. Even Sir Stafford Cripps has found time to express his desire to have proper packing materials made available to exporters to aid the British export drive. You will probably find that British packing, to the extent that it has been inadequate, will improve. With respect to the booklet prepared by the committee I only want to say that it makes the same simple fundamental recommendations that could be applied to American packing.

The interest displayed in loss statistics presented at the mass meeting held last spring at the Maritime Exchange leads me to state how 1948 compared with previous years in the experience of my own company, experience I consider reasonably typical.

PERCENTAGE OF LOSS BY CAUSE
Combined Import & Export—All Commodities

	10 prewar years	1946	1947	1948
Heavy weather claims including sea water	11%	2%	4%	5%
Fresh water and sweat	14%	13%	11%	8%
Theft, pilferage and non-delivery	8%	35%	43%	33%
Breakage	14%	11%	12%	16%
Leakage, oil damage, contamination, slackage and misc.	6%	7%	9%	12%
Major disasters (fire, sinking, collision, etc.)	47%	32%	21%	26%

This will give some indication of the nature of the loss situation and the kind of losses your packing should attempt to prevent. We know that packing cannot prevent sinking, stranding, and collision losses and only in the case of certain commodities can prevent fire, so let us avoid consideration of these perils.

Sea water and other damage, correctly or incorrectly attributed to heavy weather, amounted to more than $200,000—an increase of $60,000. Much of this loss was purely fortuitous but, in my opinion, part might have been avoided by stronger packing, water resistant linings, and other precautions by shippers, another part by better stowage and ventilation. Fresh water damage, sweat and unexplained rust not attributed to heavy weather accounted for nearly $300,000 additional claims paid, down $90,000 from 1947. The same remarks apply but I would like to take this opportunity to state that much of this loss could be avoided by using vessels equipped with systems designed for forced circulation of conditioned air when they are available. I know of one intercoastal shipment of canned goods externally wet during loading at Philadelphia that was dried out by such a system before the vessel reached its next loading port, preventing damage to contents of the cartons.

Theft and pilferage and non-delivery losses combined, again in '48 exceeded a million and a quarter dollars but were down $200,000 from the preceding year. Packing and marking certainly affect the extent of loss and corrective measures are well known. Protection by carriers and custodians of cargo is improving throughout the world in varying degree.

Breakage losses rose from $400,000 to $600,000, again indicating that improved packing may be required. Each product is a separate problem. Better handling and stowage are equally as important as better packing.

Leakage, slackage and short weight, hook damage, oil damage, contamination and contact with other cargo, in total, rose from $285,000 in 1947 to $430,000 in 1948. Better packing could help to minimize such losses and so could improved handling and stowage.

The total of all the losses I have mentioned amounted to nearly $2,800,000. This may indicate that losses in American foreign trade, both export and import, ran as high as fifty million dollars in 1948. That is worth doing something about. It may have cost the consumer nearly a hundred million dollars.

I maintain that much of this loss is unnecessary and that something can be done about it. I believe that our exporters, importers, carriers, and underwriters cannot afford to be complacent. Competition is too keen in world trade. Packing, however, is far from being responsible for all of the loss mentioned. Port congestion, war-damaged storage facilities, goods scarcity, black markets, disorganized transportation and other factors have largely produced the results noted. Many of these factors have been greatly alleviated. Conditions vary throughout the world and are not static.

It would be uneconomical to pack for the worst possible conditions to be encountered. That may be necessary for the Army and Navy since it could affect a campaign. It is not necessary for commercial shipments. It is important, however, to provide packing suitable to the destination. Packing suitable for shipments to Havana may not be suitable for Bombay or Mollendo, in each case for different reasons.

With respect to each destination I think you should ask yourself the following:

(a) Is cargo going to be lightered, and if so is cargo discharged at an open roadstead where net slings may be necessary and rough handling and water damage to some extent unavoidable?

(b) Is the port congested, with delay and possibly outside storage to be anticipated?

(c) What types of cargo are currently given outside storage and what protection provided?

(d) What is the average delay between landing and delivery to consignee?

(e) When is the rainy season or hurricane season? —an important consideration if outside storage ashore or in lighters is probable.

If the answers to these questions indicate exceptional hazards, the packing should protect against them to the fullest degree practicable. Reduction in size of packages that now can only be handled by dock cranes may permit inside storage with available handling equipment—to give but one example.

Uniformity of packing is desirable, but should not be a fetish. Try to design packing that meets the reasonably anticipated conditions of protection and storage enroute to your consignee. Make reasonable tests of new packing and new products, not overlooking weakness in the design of the product itself. Mark your cases so that there is minimum possibility of mis-delivery, but do not disclose nature of contents if goods are susceptible to pilferage. Avoid delay and exposure by timely delivery to carrier and by getting documents into hands of consignee before arrival of shipment in order to permit prompt delivery.

Take an interest in the condition in which your cargo outturns. Your customer will appreciate that interest. If he is dissatisfied, you want to know about it. If you take sufficient interest there are a great many things you can do, as I have indicated, that are not going to increase your packing costs and involve little other expense. These are discussed in detail in the "Loss Prevention Recommendations" of the International Union of Marine Insurance shortly to be released. You will be interested to know that that underwriters' organization did not limit its recommendations to shippers and consignees with respect to loss prevention. The Union also drafted suggestions for consideration of port authorities, terminal operators, ocean carriers, and underwriters. The experience and ideas of underwriters of many nationalities are embraced in these recommendations and I might add that the Security Bureau, Inc., and the Packaging Committee of New York City, provided material on which certain of the recommendations were based.

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It is what is done with the recommendations that counts and I hope they will be studied and carried out to whatever degree may be practicable. I recommend your thoughtful consideration of the "Loss Prevention Recommendations" of the International Union of Marine Insurance when they are made available to you.

I would like to say just a word about the Packaging Committee. Some individuals have criticised its work and have suggested bias in its investigations. Anticipating such criticism, I had some of my associates abroad report on the adequacy of outturn inspections in the test voyages. Let me read you two brief excerpts from letters I have received. The first concerns Liverpool discharge.

"Everyone concerned was very disappointed to find there were only four 'suspect' shipments for Liverpool. From all the propaganda they heard, they rather expected to find everything consigned to Liverpool falling apart at the seams. You will be pleased to know that the Board of Underwriters' correspondent and his U. S. Lines counterpart went about this packaging survey business with a great deal of zest and there was barely any cargo unloaded that did not undergo thorough combined scrutiny. They are rendering full reports on all the cargo showing any signs of package frailty with sketches and their opinions as to cause of package failure."

And this from Singapore:

"I was present at the discharging of cargo and can confirm the surveyor's remarks that the stowage was exceptionally good. I can also endorse the surveyor's disapproval of using net slings for the simultaneous unloading of light wooden cases and cartons, as I saw several instances where the sides of the wooden cases pierced the cartons. In this connection the ship's representative advises me that he has recommended the use of cargo trays at Singapore, Port Sweetenham and Penang for discharging light cargo of this nature. Another suggestion made by him is that canvas, instead of net slings, should be used for unloading bagged cargo, i.e. flour and cement."

I certainly agree with the foregoing recommendations and consider that the better handling likely to result from the attention given the test voyages will be equally as important as the improved packing. All of this indicates that a sincere effort has been made to provide useful and practical information to the packaging committee. It is going to take some time to study the reports and present the findings, but when this is done it should enable the American exporter to know to what degree his packing requires improvement. The object should be to provide the least expensive packing that will reasonably assure sound delivery.

From my standpoint you who are exporters are our customers. We want you to prosper and provide the premiums that are our bread and substance. To the extent that the underwriter can draw on his broad observation of losses and their causes to solve your packing problems it shall be done.

Admiralty Decisions

By HAROLD S. DOBBS of San Francisco Bar

Maritime Tax Ruling

THE City of Los Angeles recently sought to impose a license tax upon gross receipts earned by independent contractors rendering services and making repairs while in port to vessels which were engaged solely and exclusively in interstate and foreign commerce. The contractors claimed that the gross receipts tax was invalid and unconstitutional, and they sought to have the collection of the tax permanently enjoined. The Contractors' objections in the trial court resulted in judgment in their favor and against the City of Los Angeles. Subsequently, appeals were filed in the District Court of Appeal of the State of California by the City of Los Angeles.

Each plaintiff claimed to be engaged wholly and exclusively in the business of contracting for and rendering services to ships employed only in interstate and foreign commerce at a time when those ships were upon the waters of the Pacific Ocean and within the harbors of Los Angeles, Long Beach, San Diego, Newport-Balboa, and Port Hueneme. These harbors are within the municipal boundaries of the respective cities. The services are rendered under contract with the owners of the ships and while they are tied to docks or anchored in the harbors. The services are rendered by employees of plaintiffs (contractors) under their direction and control either at the dock or on board ship. The services consist of painting the sides and other parts of ships, removing scale, cleaning tanks, chain lockers, boilers, furnaces, condensers, engine rooms, airducts, removing ballast, cleaning oil spilled by ships from the harbor waters, sandblasting ships' sides, scaling decks, handling ships' stores by taking them from trucks of provision merchants at the dock, trucking them from the dock onto the ships, and placing them in storerooms on board. All of the employees are under the direction and control of supervisors or foremen employed by plaintiffs. The contracts of plaintiffs provide for specific work to be done under the direction and control of plaintiffs to the satisfaction of the shore side representative, either port manager, port captain or agent for the shipowners. No ship's officer or employee has supervision over, or the right to direct or control, the work of the employees of plaintiffs.

Ordinance 91411 of Los Angeles in section 21190 provides that every person engaged in any means of livelihood as an independent contractor and not as an employee of another shall pay a license fee of $12 per year for the first $12,000 or less of gross receipts and in addition $1 per year for each additional $1,000 or fractional part thereof, and that "As used in this section, the term 'gross receipts' does not include: 1. Receipts from (any) means of livelihood, which this city is prohibited from taxing under the Constitution or laws of the United States. * * *"

The appellants assigned as error the fact that the business that respondents were engaged in was not in and of itself interstate or foreign commerce, and was definitely local in character, which should subject it to state jurisdiction and control. Respondents, on the other hand, relied upon Article I, Section 8, Clause 3 of the Constitution of the United States, known more commonly as the "Commerce Clause."

It has been held in the past that a ship in the harbor, even though docked, is engaged in commerce if it remains in readiness for another voyage.

The force of the Commerce Clause was stated in the late case of *Freeman vs. Hewit,* decided by the Supreme Court of the United States, in which the court made the following anlysis of the subject of the Commerce Clause:

> "Our starting point is clear. In two recent cases we applied the principle that the Commerce Clause was not merely an authorization to Congress to enact laws for the protection and encouragement of commerce among the States, but by its own force created an area of trade free from interference by the States. In short, the Commerce Clause even without implementing legislation by Congress is a limitation upon the power of the States. *Southern Pacific Co. vs. Arizona,* 325 U. S. 761; *Morgan vs. Virginia,* 328 U.S. 373, 165 A.L.R. 574. In so deciding we reaffirmed, upon fullest consideration, the course of adjudication unbroken through the Nation's history. This limitation on State power as the *Morgan case* so well illustrates, does not merely forbid a State to single out interstate commerce for hostile action. A State is also precluded from taking any action which may fairly be deemed to have the effect of impeding the free flow of trade between States. It is immaterial that local commerce is subjected to a similar encumbrance. It may commend itself to a State to encourage a pastoral instead of an industrial society. That is its concern and its privilege. But to compare a State's treatment of its local trade with the exertion of its authority against commerce in the national domain is to compare incomparables."

The doctrine that the loading and unloading of an interstate or foreign shipment is so clearly related to the interstate transportation as to be practically a part of it is not limited to loading and unloading done by em-

(Please turn to page 96)

- - With The

Los Angeles - Long Beach Meeting

The Society of Port Engineers of Los Angeles-Long Beach held their November meeting at Miller's Restaurant in Long Beach, with twenty-seven members and guests present. Travis Cootes, Port Engineer for French Sardine Company's Fishing Fleet, was welcomed as a new member and Thomas C. Atkinson, Wilmington Engineering Service Company, as a transfer from San Francisco. Frank Redmond of U. S. Maritime Commission, formerly of this area, was down from San Francisco and attended as a guest.

A film entitled "New Frontiers," a record of American Arabian Oil Company's progress in Saudi Arabia, was presented by E. T. Niblock of the Texas Company, and an impromptu talk was given on a new inspection tool for flaws, cracks and other imperfections in steel and aluminum forging and billets. This tool, developed by the Sperry Products Company of Danburg, Connecticut, was described by G. D. Smith of the Chicago office of the company. He was introduced by Paul Hiller of Wilmington.

At the conclusion of the meeting Dan Dobler turned the gavel over to "Hamp" Neergaard, the incoming President of the Society. "Hamp," who specializes in Marine Surveying and Ships Husbandry, recently opened a new office at 119½ West Anaheim Street, Wilmington.

Top to bottom:

Left to right: Harry Miller, Forster Shipbuilding Co.; G. D. Smith, Sperry Products Co.; Paul W. Hiller.

E. T. Niblock, Sales Dept., The Texas Co., and Dan Dobler, Marine Superintendent, The Texas Co.

Thomas C. Atkinson, Wilmington Engineering Service Co., transfer from San Francisco; and Travis Cootes, French Sardine Co., new member.

Frank Redmond, U. S. Maritime Commission, San Francisco, guest; Bert L. Hale, secretary of Los Angeles Society; Travis Cootes.

Hampton Neergaard, incoming President of Los Angeles - Long Beach Society.

Port Engineers - -

Old Timers' Night at S. F.

The Probolog being demonstrated at the December meeting of the Port Engineers in San Francisco by representatives of the Shell Development Company. Left to right: George W. Noller of Shell Development; J. H. Minnick of Lube Department, Shell Oil Company; P. A. Gibbon, Shell Development; G. A. Nelson, Shell Development; Morris Guralnick, naval architect, who had charge of the program.

George Harlan
Secretary of Society

Happy group at left was snapped at the December meeting of S. F. Port Engineers. Left to right: J. Lowell Jett, Cordes Bros.; Bill Willits, Hunters Point (12th Naval District); Eddie Rittenhouse, port engineer up from San Pedro docks of Pacific Tankers; Joe Barker, Moore Dry Dock.

They don't know that there is evil in that bottle; they look so kind and good. But on Oldtimers' Night at the Port Engineers' Society, unusual things happened, reminiscent of long ago. In the picture are said to be Bill Sizemore of Army Transport; Dick Parkin of Westinghouse; Jim Stasek of Pacific Far East Line; George Harlan of Army Transport; and the Marshall—Marshall Thomas Joseph Garlinger of Army Transport.

Membership Roster Society of Port Engineers San Francisco

REGULAR MEMBERS

NAME	AFFILIATION	ADDRESS
James R. Anderson	U. S. A. T.	Building 201, Fort Mason
Milo F. Atkinson	Milo F. Atkinson Co.	110 Market St.
Ray Baker	Richmond-San Rafael Ferry	P. O. Box 1126, Richmond
George Barr (Honorary Member)	General Electric Co.	235 Montgomery St.
William H. Billings	Pope & Talbot	320 California St.
William C. Blake	Triple "A" Machine Shop	Pier 62
Colin Branford	Shephard S.S. Co.	21 West St., New York
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John A. Harris	U. S. A. T.	Building 201, Fort Mason
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Sam W. Jaeger		Home: 1137 Hyde St
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William Beck	Dahl-Beck Electric Co.	118 Main St.
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John F. Churchill	E. F. Drew Co.	268 Market St.
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Barney Young Passes

Bernard A. Young, superintendent engineer for Standard Oil Company of California, passed away December 27 following a heart attack suffered at his home, 286 Lenox Ave., Oakland. He had been at work as usual that day.

"Barney" Young joined Standard Oil in 1921 as a first assistant engineer, serving on company ships. He had attended the University of Santa Clara and Stanford and served with the Navy during World War I.

In 1923 "Barney" went ashore at San Pedro to take over the position of marine repair inspector and marine operator for Standard of California. He was transferred to San Francisco in 1930 as repair inspector on construction and repairs, and in 1934 was appointed superintendent engineer for the company's Marine Department.

The S. S. *Jahra* on her delivery trials.

Supertankers for Superservice

he *S. S. Jahra,* first of twenty-four 28,000-ton super-
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he specific requirements of the individual operator
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These vessels, all of which will be delivered by
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apable of transporting oil products to and from the
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Fully representative of American postwar shipbuild-
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earing the title, "Bethlehem-Built."

MAIN PARTICULARS OF THE S. S. JAHRA

Length, overall	624 ft. 9¾ in.
Length, between perpendiculars	595 ft. 0 in.
Breadth, molded	84 ft. 0 in.
Depth, molded	44 ft. 0 in.
Draft, molded	33 ft. 0 in.
Deadweight, tons	28,300
Cargo capacity, bbls	240,400
Shaft horsepower, max	13,750
Speed, fully loaded, about	16½ knots

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Investigation of Cargo Distribution

(Continued from page 37)

having sufficient density to load the ship to the freeboard draft. The carriage of cargoes of heavier density introduces some variation and discontinuity in loading distribution.

The data presented indicates that possible operating stresses increase with size of vessel and cargo density and may exceed the basic design stress by a comfortable margin. With proper control of cargo distribution, the operating stresses become more favorable as cargo density increases.

Loading recommendations should result in operation at or near the lowest possible stress. In no case need the basic design stress be exceeded.

Lower operating stresses should result in reduced maintenance costs and less exposure to structural hazards.

The diagrams and tables show pertinent stress information for the standard longitudinal stress analysis as applied to the selected vessels. Practical minimum operating stresses are given for varying cargo densities and arrangements of cargo distribution associated with these minimum stresses are described. In establishing minimum stress values, hog and sag stresses have been equalized, where possible.

The stress-envelope diagrams are considered to be of particular importance since they show extreme and minimum operating stresses. The basic stress-envelope triangles derive their shape entirely from weight distribution and are merely transposed to different stress values as distribution of buoyancy changes in hog, sag or still water investigations.

The apexes of the triangles represent the stresses for homogeneous loading. The sides enclose the possible hog and sag operating stress ranges for various cargo densities and distributions. The triangles illustrate clearly that the operating stress may be greater or less than that for the homogeneous condition depending upon cargo distribution.

The tables of recommended loadings should be of special interest to operators as they convert the analytical aspects of this paper into operating guidance. The loading patterns, illustrated for the selected vessels, can be used as a broad basis of guidance for other similar vessels.

The carriage of "mixed cargoes" and its effect on longitudinal stresses has been examined and this rather complex problem has been analyzed for a particular vessel.

A study of ballasting arrangements has been made with a view to reducing operating stresses in this condition. Ballasting recommendations are included for selected vessels.

The stress conditions in still water with variable loading have been examined and illustrated, and a suggested order of loading and unloading tanks has been given.

It is hoped that this paper will point the way to an appreciable reduction in tanker operating stresses and highlight the great importance of judicious cargo distribution in the control of operating stresses.

Structural Tests on the Passenger Ship SS "President Wilson"—Interaction Between Superstructure and Main Hull Girder

By JOHN VASTA, Head, Hull Design Scientific Section, Bureau of Ships, Navy Department, Washington, D. C.

A series of full scale structural tests was made on the passenger ship *President Wilson,* Maritime Commission Design P2-SE2-R3, at the Bethlehem Alameda Shipyard during the months of August and September, 1947. The tests were planned to evaluate the interaction of the long deck house with the main hull girder and to assess the contribution of the superstructure to the stiffness of the main hull. Strains and deflections were recorded for five separate loading conditions which induced various bending moments on the hull structure. The author presents the analysis of the experimental data, a theoretical appraisal of the problem, and conclusions as to the effectiveness of the house structure in a vessel provided with no expansion joints. An empirical equation is developed that predicts the primary stress at the strength deck as influenced by the presence of the deck house structure.

Rivet Slip, Stress Distribution And the Deflection of Ships' Hulls

By E. M. MACCUTCHEON, Head of Materials and Statics Section of Structural Mechanics Laboratory, David Taylor Model Basin, Navy Department, Carderock, Maryland.

The terms "rivet slip" and "flexibility" have been a part of the language of naval architects for many years. The interpretation of "rivet slip" is fairly direct but the use of the term "flexibility" is often somewhat vague. The paper amplifies the definition of flexibility in terms of rivet slip on the performance of a typical structure.

There is a need for a better understanding of the reaction which can be expected as the result of a particular rivet slip assumption in order to assist in the interpretation of rivet slip data. Accordingly, two rivet slip hypotheses were selected. Neither of the hypotheses is offered as being a true representation of actual rivet slip conditions. Both hypotheses are reasonable and amenable to mathematical exposition. Under the first hypothesis it is assumed that the stress on each rivet is a definite fraction of the stress which would have been on the rivet had no slip occurred. Under the second hypothesis it is assumed that rivet slip is nonexistent until a certain stress level on the rivet is reached and that the rivet stress cannot increase above this level so that further shear deflection occurs at a constant stress value. On the basis of these two hypotheses calculations were made indicating the extent of slip, the hull deflections and the stress distribution. These results are compared with data obtained on a welded and a riveted ship in banding tests which are mentioned below.

During the last two years the British have completed tests on two typical standard tank ships, the *Neverita,* which is all welded, and the *Newcombia,* which is essentially all riveted. The ship hulls were bent by shifting ballast; and the strains and deflections were recorded along with other pertinent information. The British prepared structural reaction predictions in connection with the performance of these tests. The author discusses refinements on the British predictions in the following respects: the standard assumptions of effective material in the cross-section; the buckling of plate panels; the addition of an amidship superstructure; and the use of the strain energy method for sheer deflection computations. A method of hull deflection correction for temperature differences has been devised and applied to the results from the British tests. These corrected results are compared with predicted results incorporating the refinements listed above. Both hull deflections and hull stress distribution are included in the comparison of predictions against test results.

It is concluded that the test data favor the existence of a small amount of rivet slip but that the corresponding increase in flexibility cannot be detected unless delicate instruments are employed under carefully controlled test conditions. The added material in faying flanges, seam overlaps and connecting angles necessary to the joining of the components of a riveted ship increase the section stiffness and decrease the flexibility more than it is increased by rivet slip. Thus a welded ship is more flexible than its riveted counterpart. The paper also shows that overall flexibility is undesirable because it is accompanied by higher stresses at important locations, when the hull is subjected to a static bending load.

The Captain—and Shipboard Morale

(Continued from page 61)

closely on the pulse of his officer morale and make each officer feel that he is worthwhile. The master will get to know his officers much better in this manner, catching them in a more relaxed environment than when he deals with them in the line of duty. This act will give the officers a much better chance to know their captain. In any event—and at all costs—periodic off-duty association with any *select* group of officers is to be avoided like poison. Nothing can be more detrimental to the morale of officers outside this "clan." The fact that must be put over is that the captain deals with all officers according to their rank and not their persons.

Handling His Crew

The most valuable instrument a master can have for the smooth running of his ship is the trust and confidence of his crew. If his reputation among his crews is such that no crew has ever been able to say that he has ever done anything to their disadvantage—or with ulterior motive in mind—then he is a blessed skipper indeed. Acquiring that reputation is not so difficult as it may at first seem. Exercising *sincerity* is the answer. And *tact* should be the right hand partner of sincerity.

To the master who may feel that to use tact in dealing with the crew is to lower his dignity and, ultimately, his control over that crew, let him recall how many times *lack of tact* has created discord on his ship. Let him also realize that the practice of tact in human relations is a round-robbin proposition. Thus, a master is tactful with his officers and crew who, in return, are tactful with him. Being the leader, *he* is the one to initiate tact.

Attention to the cleanliness and good order of crew spaces, galley, messrooms, etc., is a customary chore of the master, it is true. But when a master attends to these chores in a grudging manner, believing such attention to the comforts of his men lowers his dignity or authority, the crew will notice this attitude immediately for they are very sensitive to such attitudes. On the other hand, if the master keeps close tabs on the condition of these spaces he will almost always see the need for rectification or improvement long before any crew members chance upon it—and that is a feather in the cap of the Old Man, every time. For the master to tell the crew how to improve their living conditions is to maintain authority and gain respect and gain the crew's appreciation for his concern in their welfare.

One rather important group of crew members is the cooks. It is a wise master who sees to it that these men realize their special and peculiar importance on board ship, in helping to maintain a happy crew. Napoleon had it: "An army advances on its belly." Paraphrasing that remark in the negative, it might read: "Sad soups sink ships." If the master will see to and supervise the proper preparation and neat serving of good food he will obviate the fatal feuds which spring up between crew and cooks when he does not.

Among the non-licensed departments on board, the one which is usually farthest from the master's contact is the unlicensed engine room gang. And, in return, the unlicensed engine room gang is the group which knows least of the master and, as a rule, views him with greater suspicion than any of the other crew members. Attention to this group is not misplaced. The master should consciously take these men into consideration because if he does not he will, unconsciously, ignore them—they are so far away from him. Although it is convention and practice to leave the welfare of these men almost exclusively in the hands of the chief engineer, it has been observed that in matters outside the working of the engine room they usually ask for a greater authority than the chief engineer in settling their problems. The best arrangement would seem to be to get the chief engineer to take the master closely into his confidence regarding these problems so that the master can stand intelligently and solidly behind the chief when the occasional row needs straightening out. There are few chiefs who will not appreciate a master's help in this direction — especially when they see how much smoother they can operate their department if they *do* compare notes with the skipper . . . and do ask him for help.

On all sea routes there exists a "foul up" port—a port where the crew in general kick over the traces and seek the excitement and pleasures which the somewhat sterile shipboard life cannot provide. In the main, crews sign on a ship because of the route that ship is to take, having in mind the "'pleasure port" included in that particular itinerary. What to do about this low point on the voyage? What *not* to do is suggested below:

Do not refuse a wage advance in this port. If it is refused, on a technical point, the men will know the refusal for its technicality and will react accordingly—with technicalities. A man without spending money from the wages due him may try to peddle ship's stores or gear, or run contraband ashore. In any event, he will be vociferous in his complaint and, needless to say, will perform his port duties badly, if at all.

What to do? Summon representatives of the various departments, prior to the joy port, and tell them that the port's pitfalls are well known to the master, that it is expected all ship's work will be carried on as usual, regardless of this fact; that the master expects the various departments to accomplish their work, doubling up if necessary; that the master will expect the men to police each other, as necessary. After sailing, log all men who have failed to accomplish their work. Do this impartially and impersonally.

(This article will be continued in the February issue)

General Petroleum Expands at Puget

Plans for the construction at Neah Bay of bulk oil storage installations ashore and dockside product delivery facilities by General Petroleum Corporation, to be added to the recently completed dock of the Fishermen's Cooperative Association, Inc., were announced jointly by Albert E. Horn, Jr., the oil company's Washington division manager, and officials of the cooperative, John Olsson, president, and Bert Johnson, secretary and general manager.

Construction is scheduled to begin this month and will take an estimated 75 days to complete. Four 20,000-gallon bulk oil storage tanks will be built near the shoreline. The tanks will store gasoline, diesel and white diesel (50 Cetane) fuels. An extension to accommodate a marine oil products warehouse and sales office will be added to the cooperative's 589-foot dock; and a 60-foot float, completely equipped for servicing vessels coming alongside, will be built to extend from the warehouse area on the dock.

Completion of the construction will mean that the cooperative, which will serve as agents for General Petroleum on the Makah Indian Reservation, will be able to offer complete marine products and service to fishing vessels in addition to ships stores, fish icing and storage facilities.

APL Honors 25-Yearers

American President Lines' employees with 25 years service and over were specially honored at the Company's annual holiday luncheon at the Hotel Mark Hopkins when President George Killion presented each with a gold and jeweled service pin indicative of their respective years of service. Top service man in the San Francisco headquarters staff is J. A. Tognetti (second from left, middle row), APL Secretary and Comptroller, with 41 years continuous service.

Bottom row, left to right: W. T. Herman, Myron T. "Jeff" Holzer, Mabel Delucchi, Senior Vice President M. J. Buckley, Maud Williams, Sophie Gallagher, L. V. Foye, Harriet White, Don Tinling.

Middle row, left to right: Leo A. Mathews, J. A. Tognetti, J. T. Danaher, T. H. Wheeldon, William Hatch, A. E. Molander, Charles S. Cohn, Fred I. Throop.

Top row, left to right: A. L. Schmalz, Vice President W. K. Varcoe, Captain Orel A. Pierson, F. S. Kraus, E. C. Kester, Carl Nordling and Harry Newman.

Marine Exchange Annual Meeting

eft to right: Eddie Harms (in the clouds), president of the Propeller Club; Claire Goodwin, president, Oakland Harbor Board; Ben Kline, presenting the mayor; Fred Galbreath, president, Marine Exchange; Roger Lapham, who spoke on the shipping situation covering especially e past waterfront strikes; Capt. W. R. Thayer of MSTS; Charles Howard, Howard Terminals; B. J. Feigenbaum, president, State Board of Harbor Commissioners.

Los Angeles-Long Beach Propeller Club News

The Propeller Club of the United States, Port of Los Angeles-Long Beach, had its usual holiday observance on December 21 with Sky-Pilot J. Whitcomb Brougher, Jr., acting as master of ceremonies. The board of governors of the club held its meeting November 22. George H. Bushnell, Southern California manager for Pope & Talbot, was unanimously elected to fill the vacancy caused by the death of Rear Admiral L. L. Bennett, U.S.C.G., Ret'd. Bushnell will carry on for the balance of the term expiring June 30, 1950.

New members of the Club are William Harrison Leisk, manager, Towboat Dept., Wilmington Transportation Co.; Reginald O. Eaton, Navy Service Engineer, General Electric Company, Los Angeles; Henry Humann, Rep., Banco Nacional De Mexico, S. A. in Los Angeles. The Club is losing a member in Rear Admiral L. B. Olson, U.S.C.G., Commandant, 11th Coast Guard District, who has been transferred to the 1st Naval Coast Guard District, Boston. Captain T. Y. Awalt, USCG, has been named Acting Commander for the 11th Coast Guard District.

Election of Officers—San Francisco Junior Chamber of Commerce

Harold S. Dobbs, attorney, associated with Lillick, Geary, Olson, Adams & Charles, has been elected president of the San Francisco Junior Chamber of Commerce to serve in 1950. Dobbs succeeds Herbert M. Chisholm, who was recently elected to the board of directors of the San Francisco Chamber of Commerce.

Only 31, Dobbs joined Junior Chamber in 1944. In 1945 he became an officer of its marine committee and has served continuously on the board of directors since 1946. During 1947 he served as executive vice president of the organization. He has served additionally as director and vice president of the California State Junior Chamber of Commerce.

Newly elected executive vice president of the organization is Elmer D. Samson, owner, Samson Sales Co. Gordon T. Hicks, pro-assistant cashier with the Bank of America, N. T. & S. A. was elected vice president and treasurer. Felix F. Stumpf, attorney with McCutcheon, Thomas, Griffiths and Green was named vice president. Paul Naton was re-elected secretary-manager.

Other members elected to the board of directors are: Stanley J. Bernhard, Emsco of San Francisco; Richard S. Bishop, Hadsell, Sweet & Ingalls; Albert W. Cunningham, Hastings; George Galvin, United Airlines; Otto Haueisen, Monorail Steel and Construction Co.; Charles W. Lindemann, Jr., Lindemann Jewelry Co.; Donald J. McCauley, American Can Co.; Bert B. Meek, Brobeck, Phleger & Harrison; Albert C. Meyer, Bank of America; Charles D. Rush, Manhattan Life Insurance Co.; Alden L. Stock, Union Sugar Co.

Harold S. Dobbs

Memorial Chapel To Be Erected At Merchant Marine Academy

A nation-wide appeal is being made for public subscriptions to establish a fund of $500,000 for the erection of a nondenominational chapel at the United States Merchant Marine Academy at Kings Point, New York, as a permanent memorial to the merchant marine dead of all wars. The campaign is being conducted January 1 to October 1, 1950, General Philip B. Fleming, Chairman of the United States Maritime Commission has announced.

The membership of a national committee and regional committees to sponsor the campaign, which has special Congressional authorization, was also disclosed by General Fleming. Clarence G. Michalis, Chairman, President and Trustee of the Seamen's Bank for Savings, New York City, is Chairman of the National Committee of prominent people representing the steamship industry, religious groups, organized labor, education and government. S. Duvall Schell, Vice-President of the National Federation of American Shipping, Washington, D. C., is Vice-Chairman.

The regional committee chairmen are: James A. Farrell, Jr., President, Farrell Lines, New York City, for the Atlantic Coast and Great Lakes; S. B. Turman, Executive Vice-President, Lykes Brothers Steamship Company, Inc., New Orleans, Louisiana, for the Gulf Coast; and George Killion, President, American President Lines, Ltd., San Francisco, California, for the Pacific Coast.

Contributions to the Merchant Marine Memorial Chapel Fund may be made through the regional committees or sent to the National Treasurer, Commodore J. H. Gilman, USMS, U. S. Maritime Commission, Washington 25, D. C. Donors may honor merchant marine war dead among their relatives or friends by establishing individual memorials such as pulpit, chancel, baptismal font, alter, window or pew in the chapel.

Bendix Representative Visits West Coast

Snapped in San Francisco, Leonard O. Mjolsnes (right), assistant chief engineer for fuel injection equipment, Scintilla Magneto Division of Bendix Aviation Corp., was recently on the West Coast visiting diesel engine manufacturing plants and current diesel installations aboard Pacific Coast vessels, including the "Sun Beam" at Todd's Los Angeles yard. He is shown here with George M. Anger, Western States representative of the company.

New Valve Bulletin

A new bulletin (E-160) on quick-operating valves for general services has been published by Everlasting Valve Company, which has specialized in the manufacture of this type of valve for more than 40 years. The bulletin describes and illustrates the design and construction of these valves in detail, and explains their application to blow-off service and on fire protection, chemical process, soot blower, water column blow-down, and other types of pipe lines. Included in the bulletin are complete tables of dimensions, weights and list prices for straight lever and rack-and-pinion types, inside packed and with outside stuffing box, and with screwed or flanged ends in a range of sizes and pressures. Copies of this publication can be obtained by addressing Everlasting Valve Company, 49 Fisk Street, Jersey City 5, N. J.

"On The Bridge The Weather Is Always Clear"

◀ "The best friend of mine at sea," is the term applied to Raytheon's Mariners Pathfinder radar by Captain Joseph Cailloce, Master of the French Line's S.S. "Ile de France." Captain Cailloce is shown at the radar indicator (left) just before the rebuilt "Ile de France" left on her sixth transatlantic crossing. He stated that "with the aid of the Mariners Pathfinder the liner has always been on schedule and, regardless of fog or storms, the weather on the bridge is always clear."

Captain Cailloce has been at sea for 38 years and with the French Line 25 years.

Naval Academy Open to Reservists

Opportunity for appointment to the U. S. Naval Academy at Annapolis is open to qualified members of the Naval Reserve.

In general the requirements are:

(a) Not be more than 21 years of age on April 1, 1950 (23 years for men with one year's honorable service in World War II).

(b) Membership in the Naval Reserve for at least one year by July 1, 1950.

(c) A good record.

(d) The same moral, mental, and physical requirements as are required of other candidates for appointment as midshipmen.

Full information on this program and the Naval Reserve in general is available at the Naval Reserve Recruiting Office, Room 4, Federal Office Building, San Francisco. Telephone MArket 1-3828, Extension 360.

Rethreading Crane

The 100-foot, 100-ton stiff leg crane on Pier 7 at Oakland Army Base was back in service after an ingenious rejuvenation job which saw its mile-long steel cable replaced with a new strand in a matter of nine hours.

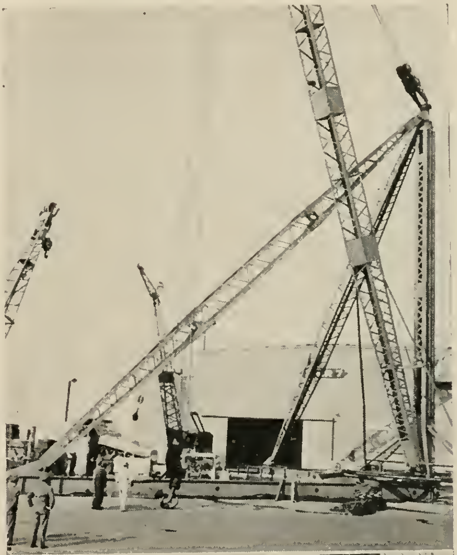
The job was performed by Port Transportation Division's maintenance Branch headed by Lt. Col. Henry Kelliher.

John Johanson of 867 Milton St., Oakland, crane shop supervisor, directed the operation.

The replacement operation ordinarily takes two weeks, using eight to ten men, Colonel Kelliher said.

Seven men accomplished the Pier 7 crane job in nine hours by attaching a spare cable reel to a power plant, splicing the old and new cables together, and rolling the old strand on the spare wheel as they pulled the new five-ton steel wire through the 40 sheaves of the huge cargo-lifting device.

The cable which was replaced had been in use through the war years, lifting thousands of tons of heavy cargo, including locomotives, loaded aboard ships in the Terminal Operations at the Oakland Army Base.



Right, top: Overall view of rethreading operation of stiff-leg crane. At far left, drum of new cable; and at base of stiff-leg, drum receiving old cable. All points are watched by Army officers and mechanics at Pier 7-W, Oakland Army Base, Oakland, Calif.

Right, bottom: Power plant wheels and cable drums turn slowly as threading operation begins, putting 5000 feet of 1-inch Langlay plough steel wire center cable over 40 sheaves, multiplying power from plant to a lifting capacity of 100 tons.

Below: Splicing new cable to old in preparation to rethreading of the Stiff Leg Crane on Pier 7-W, Oakland, Calif. Jack Bray holds the torch, assisted by Al Oldfather.

Captain Lancaster to Direct Hendry's Navigational Dept.

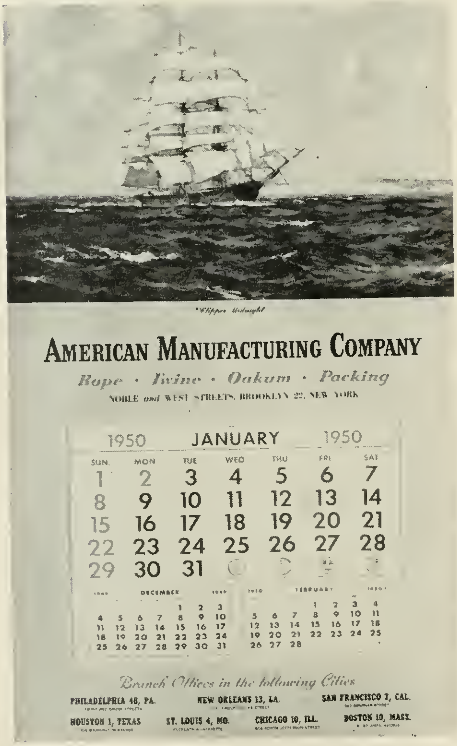
C. J. Hendry Company, 27 Main St., San Francisco, recently acquired the sales agencies for navigational charts and publications of the U. S. Coast & Geodetic Survey and the U. S. Hydrographic Office. In charge of this new navigational department is Captain Alfred Lancaster, who is shown (right) in the department. Captain Lancaster's years of experience with Hendry and his experience as Master especially qualifies him to assist deck officers in the purchase of navigational aids.

The Hendry Company also acquired the entire stock of nautical instruments of the Louis Weule Company, including compasses, binnacles, ship's clocks, ship's logs, binoculars, barometers, and chart-room equipment.

American Manufacturing Co. Calendar

The 1950 calendar of the American Manufacturing Company, pictured below, has on it a reproduction of the Clipper "Midnight" taken from the original painting done by Montague Dawson, well known marine artist. The original painting is owned by Isbrandtsen Steamship Company, New York City.

Free copies of the calendar are offered to the marine trade while the supply lasts. Write to American Manufacturing Company, Noble and West Streets, Brooklyn 22, New York.



"Clipper Midnight"

AMERICAN MANUFACTURING COMPANY

Rope · Twine · Oakum · Packing

NOBLE *and* WEST STREETS, BROOKLYN 22, NEW YORK

1950 JANUARY 1950

SUN.	MON	TUE	WED	THU	FRI	SAT
1	2	3	4	5	6	7
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1950 FEBRUARY 1950

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26	27	28				

Branch Offices in the following Cities

PHILADELPHIA 48, PA.
NEW ORLEANS 13, LA.
SAN FRANCISCO 7, CAL.
HOUSTON 1, TEXAS
ST. LOUIS 4, MO.
CHICAGO 10, ILL.
BOSTON 10, MASS.

National Federation Election

The following directors and alternates of the National Federation of American Shipping were elected at an annual meeting of the Federation in New York recently:

A. A. Alexander, general manager, Eastern Seaboard, American President Lines, Ltd.

R. R. Adams, president, Grace Line, Inc.

John E. Cushing, president, Matson Navigation Company.

John M. Franklin, president, United States Lines.

Hugh Gallagher, vice president, Matson Navigation Company.

M. G. Gamble, president, Esso Shipping Company.

A. W. Gatov, presidenr, Pacific American Steamship Association.

John F. Gehan, executive vice president, American Export Lines.

J. J. Halloran, vice president and general manager, Sprague Steamship Company.

Lawrence W. Hartman, director, Eastern Division, American Mail Line.

George Killion, president, American President Lines, Ltd.

Charles Kurz, president, Keystone Shipping Company.

A. R. Lintner, president, American Mail Line.

Joseph T. Lykes, president, Lykes Brothers Steamship Company.

Lewis D. Parmelee, president, Agwilines, Inc.

W. H. Peabody, Sr., executive vice president, Weyerhaeuser Steamship Company.

W. Creighton Peet, assistant vice president, Matson Navigation Company.

Maitland S. Pennington, vice president, Pacific Transport Lines.

H. Harris Robson, vice president, United Fruit Company.

Frank J. Taylor, president, American Merchant Marine Institute.

H. W. Warley, president, Calmar Steamship Corporation.

Walter M. Wells, president, Isthmian Steamship Copany.

Ex officio: Frazer A. Bailey, president, National Federation of American Shipping, Inc.

Emeritus: John McAuliffe, chairman, American Eastern Corporation.

any old port in a storm?

It's a wise shipper that heads for COVER when the storm clouds appear. With ample covered storage space . . . plus covered loading platforms . . . America's Most Modern Port can offer year 'round dry cargo handling in addition to the many other features which result in speed and economy of operation to the shipper.

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AMERICA'S MOST MODERN PORT ★ CALIFORNIA

Gamlen Plans New Laboratory and Plant

Pioneers in the marine chemical industry, Harry Gamlen, senior member of Gamlen Chemical Company and two of his three sons, C. Gamlen and R. A. Gamlen, (right) go over plans for their new laboratory and plant to be built on the West Coast early this year.

Harry Gamlen, internationally well-known to the marine industry, started chemical research on ships 25 years ago. Since that time he has made many contributions to the marine industry.

After completing the new West Coast facilities, their attention will then be centered in the East where another new plant is planned also for completion in 1950.

A New York plumber wrote to the Bureua of Standards that he had found hydrochloric acid good for cleaning-out clogged drains. The Bureau replied: "The efficacy of hydrochloric acid is indisputable, but the corrosive residue is incompatible with metallic permanence." The plumber wrote back that he was glad the Bureau agreed with him. To which the Bureau responded: "We cannot assume responsibility for the production of toxic and noxious residue with hydrochloric acid and suggest you use an alternative procedure." By return mail the plumber wrote he was glad the Government thought his idea O.K. In desperation, the Bureau broke down and wrote the plumber in plain language: "Don't use hydrochloric acid. It eats hell out of the pipes."

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The Federal Paint Company, Inc.
33 Rector Street, New York, N. Y.

Combustion Engineering-Superheater, Inc. And Robt. L. Johnson Corp. Expand in West

Combustion Engineering-Superheater, Inc. and the Robert L. Johnson Corporation, in recognition of the growing industrial activity of the West Coast, are expanding their respective operations.

For the past twenty-five years, the two organizations have had joint offices, with the Robert L. Johnson Corporation functioning as sales agent for Combustion Engineering-Superheater, Inc. in California and Arizona, and operating independently as an engineering and construction organization.

R. M. Hatfield

In order to facilitate their respective expansion programs, the two organizations are now operating separately.

Robert L. Johnson Corporation is continuing in its present offices in San Francisco and Los Angeles with the same personnel and organization as in the past, and with increased facilities as engineers and constructors. It is also continuing to supply power plant and allied equipment.

Combustion Engineering-Superheater, Inc. has established a Western Division to handle direct the sales, installation and service of all Combustion products in the States of California, Oregon, Washington, Nevada and Arizona. R. M. Hatfield, Jr. has been appointed General Manager of this Division with headquarters in Los Angeles. An engineering graduate of Purdue University, Hatfield has had 15 years of service with the Company, interrupted during the War Years when he was on loan to the War Production Board. There he served successively as Chief of Boiler Section, Director of Production Scheduling Division and Deputy Vice Chairman for Production, in charge of production for all war industries. H. G. Thielscher, formerly Resident Engineer of Combustion, has been appointed Chief Engineer of the Western Division with headquarters in San Francisco. Prior to his association with Combustion, Thielscher was general superintendent in charge of power generating stations for the Potomac Electric Power Company of Washington, D. C.

Frank Bader of Combustion's Philadelphia Office has been transferred to San Francisco, and Elmo Keeler of the New York Office has been transferred to Los Angeles. Hugh Nickle, formerly in charge of the Company's Paper Mill Division in New York, and more recently district manager of the Northwest, will continue in that capacity with offices in Seattle.

The activities of the Western Division will include sales, installation and service of the Company's line of boilers and related equipment for the utility, industrial and marine fields, as well as pulverizing and drying equipment for industrial plants, chemical recovery units and bark burning boilers for the pulp and paper industry, and sewage sludge drying and incineration equipment for municipalities.

All incompleted contracts by either organization will be carried through to completion unaffected by the above changes.

Bendix Aviation Promotes A. J. Poole

Scintilla Magneto Division of Bendix Aviation Corporation recently announced the promotion of A. J. Poole, Sr., to sales and service manager of diesel engine products.

Poole was born in London, England, and has concentrated much of his time and energy in the automotive and diesel fields.

A. J. Poole, Sr.

Joining Bendix Aviation Corporation in August of 1931, in 1945 he was loaned by the corporation to the U. S. Government as an investigator in the automotive field in Germany. He returned to Scintilla in 1946. A past vice president of the Society of Automotive Engineers, he has been a member of that organization since 1910.

●

New "Diamond Power" Marine Sales and Service in San Francisco Area

C. C. Moore & Company, 450 Mission St., San Francisco, (Phone, Garfield 1-3484) has been appointed sales agent for Diamond Soot Blowers, Boiler Water Gauges and Smoke Indicators for marine applications in the San Francisco territory.

A Diamond direct factory service branch has been established at 29 California St., San Francisco, (Phone Garfield 1-0895). In charge of R. W. Hall, this branch carries a stock of genuine factory-made repair parts for quick service to vessels entering the San Francisco Bay area. Where time will not permit shipment from the factory, users will be assured the advantages of genuine Diamond parts.

Both organizations are ready to serve you with an expert knowledge of marine needs.

DIAMOND POWER SPECIALTY CORP.

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18 knot White Cargo Liners

- Twice monthly to and from Manila. Hong Kong, Japan.
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Ventilated stowage — refrigeration cargo lockers — deep tanks.

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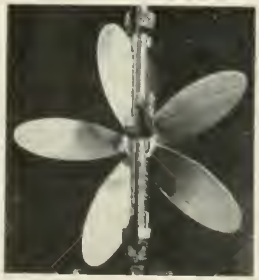

It's a Daisy

Demarest Representative Of Socony Paint Products Co.

James F. Demarest of Socony Paint Products

James F. Demarest has recently become a representative of Socony Paint Products Company, paint manufacturers since 1872. With headquarters at 417 Montgomery St., San Francisco, Demarest will work with A. M. Christianer in the sales of Socony marine and industrial paint products.

After graduating from the University of California, Demarest served as engineering officer on a Pacific Fleet submarine. Prior to joining Socony he spent four years estimating ship repairs for Bethlehem's San Francisco Yard.

Demarest is an associate member of the Society of Naval Architects and Marine Engineers and also of the Mariners Club. He is the son of Captain R. O. Demarest, Marine Superintendent for Sudden & Christenson.

SOPAC Open House

The whole industry turned out for the Sopac Christmas Open House at Long Beach. In the top picture "Buck" Plant and Bill Harris are showing how turkey should be handled at this time of the year.
If you don't recognize yourself in the lower picture, it is probably because the camera lens wasn't big enough to reach you. Better luck next time.

McRitchie and Beckman Retire from Bethlehem

E. P. McRitchie, Naval Architect, and W. G. Beckman, Transportation Foreman at the San Francisco Yard of Bethlehem Steel Company, shipbuilding Division, have retired from the company.

McRitchie, who designed all the ships for the Inter-Island Steamship Company in Honolulu and did the preliminary design work on the Bethlehem-built *Lurline*, *Mariposa* and *Monterey*, started his shipbuilding career as a draftsman in Dundee Scotland in 1896.

He started to work for the San Francisco Yard, then the old Union Iron Works, in 1905 as a Hull Draftsman. He was made Chief Hull Draftsman in 1915 and Naval Architect in 1925.

McRitchie is a member of the Society of Naval Architects and Marine Engineers and the Propeller Club.

◀ E. P. McRitchie

Rapp Again

Below: Larry Rapp of C. C. Moore & Co., San Francisco, representatives for Babcock & Wilcox. Last month we announced the return of Mr. Rapp to the Butch Hill organization. Larry is a jovial fellow with an authoritative knowledge of boilers. Sometimes, however, he will come up with quotes. We ran smack into this one at the Port Engineers' meeting the other evening.

"It's unwise to pay too much, but it's unwise to pay too little. When you pay too much you lose a little money, that is all. When you pay too little, you sometimes lose everything, because the thing you bought was incapable of doing the thing it was bought to do. The common law of business balance prohibits paying a little and getting a lot . . . it can't be done. If you deal with the lowest bidder, it's well to add someting for the risk you run. And if you do that, you will have enough to pay for something better."

John Ruskin.

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Clark New President Of Pacific Maritime Association

Henry W. Clark has been elected president of the Pacific Maritime Association, effective February 8. He has been serving as vice president and general manager of the Association.

Born in Wrangell, Alaska, Clark attended Stanford University and received B.A. and M.A. degrees from Harvard, where he was rated an All-American center on the football team. After graduation he was varsity football coach and dean of freshmen at Trinity College, Hartford, Conn., assistant athletic director and history instructor at Harvard, and director of athletics and history instructor at Lafayette College.

During the 1930's Clark served as field representative for the Federal Security Agency. He was a major in the Army in 1942, a Colonel in 1944. In charge of the Army Athletic Program, Clark served in every American theater of war.

Henry W. Clark

He was general manager of the Alaska Development Board at Juneau in 1946, and in November of that year came to San Francisco to serve with the Waterfront Employers Association. He became vice president of that Association in 1947.

Clark is a member of the Board of Overseers of Harvard, and is on the Advisory Committee of the Y.M.C.A. at San Francisco. He is the author of two books on Alaska, "History of Alaska" and "Alaska—The Last Frontier."

Garlock Appointments

Effective February 1, 1950, Louis Mohn is appointed general sales manager of the Garlock Packing Company with headquarters at Palmyra, N. Y. Mohn has been district sales manager at Pittsburgh, Pa., since March 1929 and prior to that date was a sales representative in the Pittsburgh territory. He succeeds Phil Arnold, who has been with Garlock for 41 years. Arnold is resigning as sales manager but continuing as vice president.

Also effective February 1, 1950, Eugene G. Flannery, heretofore a Garlock sales representative in Pittsburgh territory, is appointed district manager at Pittsburgh to succeed Mohn.

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Pearson Joins APL

Capt. O. W. Pearson

Appointment of O. W. Pearson, veteran West Coast shipping executive and President of the Pacific Maritime Association, as Assistant Operating Manager of American President Lines, is announced by Company President George Killion. The appointment will be effective February 8.

Pearson will be in charge of all cargo handling facilities and terminal operations throughout the Company's global network of shore installations.

Born in Halmstead, Sweden and educated in Swedish schools, Pearson went to sea in 1910 as a seaman on a square-rigged sailing vessel. When he entered the shoreside phase of West Coast shipping, he held both Masters and Pilots licenses, and had served on both sail and steam vessels operating from the Atlantic and Pacific coasts.

In 1922, he joined Banning Stevedore Company as a longshore foreman, and in 1931 he helped organize the Marine Terminals Corp., in Los Angeles as Superintendent, and later was Executive Vice President and General Manager of Marine Terminals, as it became one of the leading stevedoring firms in California.

A veteran of both World Wars, Pearson served as Port Captain of Installations of the San Francisco Port of Embarkation, key United States shipping point for the Pacific Theater, during World War II. As a civilian aide he set up and superintended cargo handling operations at Fort Mason prior to his appointment as Port Captain. At the end of his Army service, Pearson returned to the Marine Terminals Corp., and in April, 1949, was elected President of the Pacific Maritime Asociation.

Edgar Martin Company Moves

The Edgar Martin Company, Engineering Distributors, has moved to improved quarters at 55 New Montgomery St., Suite 408-10, San Francisco. Present telephone number—DOuglas 2-0862—will be retained.

The Company is representative for Amercoat vinyl coatings and Rust-Tox.

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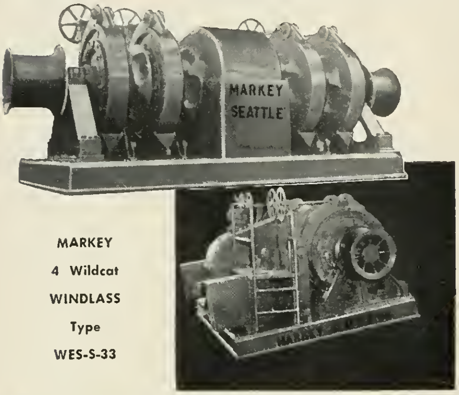

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The very name "MARKEY" on deck equipment is an assurance of lasting performance, whether handling 2-1/16" stud link chain for 4 anchors at a time or for ground tackle on a fishing vessel. Helping the maritime industry provide quality machinery and lasting service is an old story with Markey, but a new experience for this branch of the oil industry.

You are invited to write or wire us regarding your specific requirements, or see either of the following representatives for prompt information on any type of deck machinery.

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Charles Winslow Advocates Emergency Harbors

Operators of commercial and pleasure craft along the California coastline will enjoy greater safety in times of stormy weather or other distress if a plan proposed by Charles A. Winslow, founder and president of Winslow Engineering Company, Oakland, is pushed to a successful conclusion.

Charles A. Winslow

Speaking before the California State Chamber of Commerce at its annual meeting in the Los Angeles Biltmore Hotel the pioneer filter manufacturer urged state aid in the establishment of a chain of emergency harbors along the 1,000-mile shoreline where California faces the often turbulent Pacific Ocean. Such aid is necessary, according to Winslow, because there is neither the population nor adjoining property of sufficient assessable value at many points to permit local financing.

Winslow, who is himself a familiar figure in California waters at the wheel of his *"Hobby III,"* is chairman of the chamber's Small Harbor Development Committee and is president of the California Marine Parks and Harbor Association.

Shallow men believe in luck. Strong men believe in cause and effect. In the human mind, this tie of fate is made alive. In us it is inspiration.

—Ralph Waldo Emerson.

Men show their character in nothing more clearly than by what they think laughable.

—Goethe.

One reason the big apples are always on top of the basket is the fact that there are always a lot of little ones holding them up there.

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Foster Wheeler Boilers for Prototype

A contract has been awarded Foster Wheeler Corporation for the immediate construction of two boilers and the main condensing equipment for the U. S. Maritime Commission's prototype cargo ship.

This ship, to be built by Ingalls Shipbuilding Corporation, at Pascagoula, Mississippi, is the first of a series of cargo vessels to supplant the war-built types and will be known as the C3-S-DX1. It is of 10,500 deadweight tonnage and is nominally rated at an 18 knot speed. Preliminary specifications appeared in June *Pacific Marine Review*.

Generators

The two D-type steam generators are equipped with water walls, superheaters, and regenerative air heaters, and are oil fired with mechanical burners.

Specifications:

BOILER

Peak Capacity	80,100 lb. per hr.
Continuous capacity	53,400 lb. per hr.
Design pressure	1,000 psi
Operating presure	865 psi
Final steam temperature	900 F controlled for all loads
Feedwater temperature	395 F

HEATING SURFACES

Boiler	4,620 sq. ft.
Water walls	170 sq. ft.
Economizer	1,910 sq. ft.
Total water heating surface	6,700 sq. ft.
Air heater	4,300 sq. ft.

SUPERHEATER—5-pass, U-bend, 4 loop-in-loop, convection type

Gas temperature in	514 F.
Gas temperature out:	
Uncorrected	316 F.
Corrected	296 F.
Air temperature in	100 F.
Air temperature out	327 F.

Condensing Unit

This installation, consists of main condenser, main air ejector, auxiliary air ejector, gland steam condenser, and gland steam air ejector, as follows:

MAIN CONDENSER

Capacity	66,500 lb. per hr.
Total surface	7,400 sq. ft.
Tubes	3/4" x 18 gage x 14' effective length
Cooling water temperature	70 F.

EJECTORS

Both twin #17C, 2-stage standard marine units

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New Screw Thread Standards

(Continued from page 63)

old Sellers threads will fit and can be used with the new ABC standard, but the British Whitworth thread cannot be used with the new ABC. With us the old and new are interchangeable but not so with England."

"But, Mr. Farran," Cambell asked, "How are these standards enforced? Do we have to use the new threads? Will the FBI come aboard ship under guise of a new oiler and quit in a few weeks only to drag us all up in Federal Court like in the bootleg days when I was a boy?"

"Oh my gosh no, I hope not," Farran replied. "First, the new ABC (American British Canadian) standard thread will be specified on all government contracts. Then eventually Congress will pass a law making this standard legal but will not state that the old Sellers is illegal. As time goes on the new threads will come into more and more use. By the time this ship is worn out a new ship to replace her will have all ABC threads. You know that the legal unit of measurement in this country is the centimeter for length and the gram for weight. The inch and pound have not been declared illegal and the preponderance of use of the inch and pound has outweighed the suggestion of Congress that the centimeter be used. However, I believe that the new threads will come into use more readily than the centimeter and gram have."

The telephone on the desk rang, and Farran answered. The others could hear the voice at the other end of the line.

"Mr. Farran, this is the bridge. The captain says to tell you we will be under way at 1630 but will need only one-third speed for several hours and to save your boilers if you can."

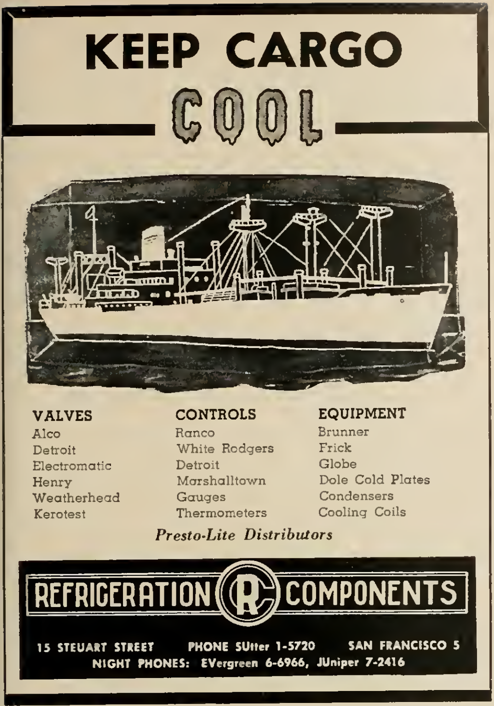
"Very well, underway at 1630, OK." Farran hung up and turned to McCoy and said, "Did you hear that Mac? That gives us 35 minutes to get ready. We could do it in 3 minutes. Better go below and advise both engine rooms. Don't start the evaporators until we get well out into the Pacific, as you will pull a lot of mud into them in the Canal and Gatun Lake. And George, when we get to San Pedro and you get your correspondence course papers, I want to have a long talk with you on the subject of thermodynamics. You will have to do some more reading."

The captain of a ship once wrote in his log, "Mate was drunk today."

When the mate became normal, he was terribly chagrined and angry—he pleaded with the captain to strike out the record; he declared that he had never been drunk before, that he would never drink again. But the captain said, "In this log we write the exact truth."

The next week the mate kept the log, and in it he wrote, "Captain was sober today."

—Get Off Here—
—End of Line—
—End of Page—
—End of Joke—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C. Lee Cook Co. of Louisville, Ky.
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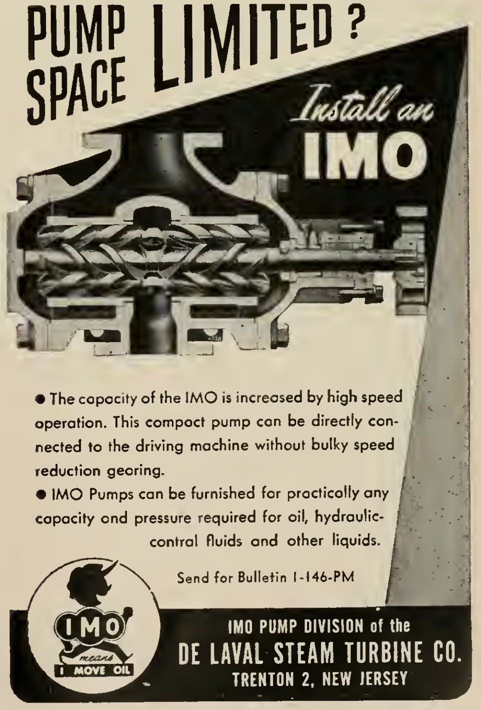
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Maritime Tax Ruling

(Continued from page 71)

ployees of an interstate carrier. The work of keeping the instrumentalities used in interstate and foreign commerce in a proper state of repair while thus used is so closely related to such commerce as to be a part of it.

If loading and unloading vessels engaged in interstate and foreign commerce is an integral part of such commerce and a tax measured by the gross receipts derived therefrom is an unconstitutional burden on such commerce, then unquestionably the service performed by plaintiffs constitute an integral part of that commerce and the tax is an unconstitutional burden thereon. The services are performed only upon interstate and foreign carriers at a time when they are engaged in interstate and foreign commerce. All the work is done on the vessels while they are on navigable waters and only during the course of their short stay in one of their many ports of call. The repairing and reconditioning and other services are rendered by plaintiffs to the end that the vessels may in a day or two resume their journey on the high seas. They are services which were formerly performed by the crew itself. They are traditionally and historically the work of seamen. Due to the demand for speed and specialized services the work is now done in large part by ships' service companies just as stevedoring formerly done by the crew is now done largely by independent contractors.

The work performed by the plaintiffs bears the same relationship to commerce as does the work of the crew of the vessel. The services are a necessary and essential part of the cargo. They not only fit the vessel for further voyage but aid in the shifting and handling of the cargo. They aid and supplement the services of the crew and longshoremen in fitting the vessels and adjusting their cargoes. The services performed necessarily and directly contribute to the more extended use of the vessels in commerce. Without such services, interstate and foreign traffic could not be carried on. The loading of ships' stores and shifting cargo in the holds, which is part of plaintiffs' work, is essentially stevedoring. The repair and maintenance of a vessel carrying cargo between the states and between foreign nations is as closely connected with interstate and foreign commerce as is the loading or unloading of the cargo. It is no answer to say that the services performed by plaintiffs consist in servicing an instrumentality by which commerce is transported and not the handling of the cargo itself which is the actual subject of commerce. Without an efficient instrumentality no cargo would be transported.

The incidents taxed lend themselves to repeated exactions and duplications in other jurisdictions. Such exactions tend to impede the free flow of commerce. A vessel traveling the high seas required painting and scaling in nearly every port of call. If Los Angeles can tax the gross receipts derived from rendition of the type of services rendered by plaintiffs so can every port in which the vessel anchors or docks. One can readily conceive of the cost of transportation becoming prohibitive.

The judges sitting on the California District Court of Appeal concluded that the incidents taxed were so close to and so inseparately intertwined with interstate and foreign commerce as to be practically a part of it. They considered none of them to be a part of intrastate commerce. They said, "They are not sufficiently disjointed from interstate and foreign commerce as to open them to state taxation."

The tax is no more valid because a similar tax is placed on local businesses. If the tax, either in fact or by the very threat of its incidents imposes a burden on interstate or foreign commerce, it clashes with the Commerce Clause. In the celebrated United States Supreme Court case of *Freeman vs. Hewit,* the Court observed as follows:

> "It has been suggested that such a tax is valid when a similar tax is placed on local trade, and a specious appearance of fairness is sought to be imparted by the argument that interstate commerce should not be favored at the expense of local trade. So to argue is to disregard the life of the Commerce Clause. Of course a State is not required to give active advantage to interstate trade. But it cannot aim to control that trade even though it desires to control its own. It cannot justify what amounts to a levy upon the very process of commerce across State lines by pointing to a similar hobble on its local trade. It is true that the existence of a tax on its local commerce detracts from the deterrent effect of a tax on interstate commerce to the extent that it removes the temptation to sell the goods locally. But the fact of such a tax, in any event, puts impediments upon the currents of commerce across the State line, while the aim of the Commerce Clause was precisely to prevent States from exacting toll from those engaged in national commerce. The Commerce Clause does not involve an exercise in the logic of empty categories. It operates within the framework of our federal scheme and with due regard to the national experience reflected by the decisions of this Court, even though the terms in which these decisions have been cast may have varied. Language alters, and there is a fashion in judicial writings as in other things."

The tax as applied to plaintiffs imposes a direct and immediate burden on interstate and foreign commerce and for that reason is invalid. The services taxed are not a detached aspect of commerce unrelated to objects of the Commerce Clause. They are an essential and integral part of commerce.

Judgment of the trial court in favor of the independent contractors was affirmed.

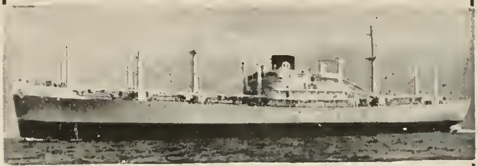
Seaman Seeks Damages For Injuries as Invitee

A MAN by the name of Miller, a seaman by trade, brought suit against a steamship company under the Jones Act for injuries sustained while he was aboard the S.S. *Sultana.* The case was tried before a jury and a verdict in the amount of $77,000 was returned to the court, but following the motion of the steamship company, the action was dismissed upon the ground that the seaman had not at the time of the accident become a member of the crew.

Subsequently, a libel was filed in admiralty to recover damages for personal injuries arising out of the same accident on the ground that the libelant was a prospective employee of the ship, and therefore within the definition or category of business guest or invitee, which necessarily carried with it the incidence of protection

(Please turn to page 98)

MOORE-McCORMACK LINES



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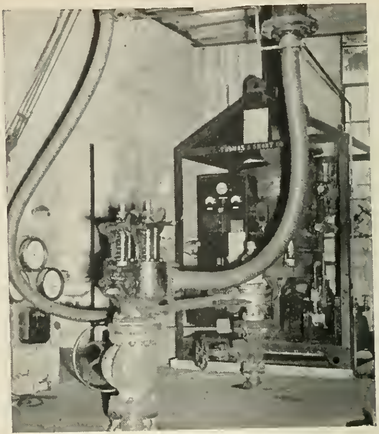

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Maritime Tax Ruling

(Continued from page 97)

that is ordinarily under the common law owed to a business guest or invitee.

The facts with respect to the manner in which the accident occurred are not at all unusual. The libelant was an oiler by trade, and he stumbled over some object near one of the hatches, and suffered severe injuries. A great deal of evidence was introduced with respect to the ship's custom in leaving hatch covers off during the period of loading or discharging.

The court found that the libelant's presence aboard was in the ship's interest as well as his own, and therefore he was entitled to the protection of a business guest or invitee. The measure of care due to such a business guest goes beyond merely warning the guest of any dangers for the duty is the same as that of an employer to an employee, which is to use reasonable care and provide for the guest's safety. The failure of the vessel to use reasonable care to provide a safe passageway for the visitor seeking employment would be a breach of its duty to such invitee. There was some dispute in the evidence offered with respect to whether the hatch was at the time of the fall partially in control of the grain elevator's employees who were in the process of emptying it. The Court said that nevertheless, the duty would not be lessened as far as the ship was concerned by the grain elevator's employees' control over it.

The Court failed to find any breach of the ship's duty, or a failure on its part to use reasonable care to provide a safe passageway for the prospective employee. There was no evidence of notice to the ship that the passageway had become unsafe, and therefore the jury must in such a situation determine the question of negligence.

The decree was reversed and ordered dismissed because of the Court's inability to find sufficient negligence to warrant judgment for the libelant seaman as a business invitee.

This country would not amount to as much as it does if the young men of fifty years ago had been afraid that they might earn more than they were paid for.

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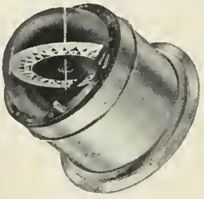

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The Merchant Marine

(Continued from page 35)

sling loads and man-handling cargo to individual stowage locations.

It may be possible to augment this improvement in certain instances by containers or palletizing, and these should be thoroughly explored, but the major operation is to overcome rehandling, and to reduce the time required in rigging gear, and covering and uncovering hatches.

Along with this we may require modernization and redesigning of terminals. We should develop a system under which delivery and receiving trucks do not pass, or take up a position, between the ship's side and the point of rest of the cargo on the dock. When this condition occurs the stevedoring operation, be it loading or discharging, is brought to a virtual standstill. Any efficiencies effected elsewhere are nullified. The quay type terminal where trucks may take cargo from the opposite length-wise side of the dock without interfering with the stevedoring operations justifies exploration. When we thus reduce the cost, we automatically reduce the loading or discharging time, and the overall port time and turn-around schedule of the vessel.

The Maritime Commission has very wisely designed a prototype cargo vessel for which the construction contract was recently awarded. It is a matter of considerable foresight to plan so that any inherent defects be discovered and corrected prior to mass production. But I hope that the commission will experiment with a departure from the orthodox cargo handling gear and hatch and hold design now incorporated in the vessel. No one knows the character of the next war, if one we must have, but there appears sufficient evidence that cargo vessels will not be able to lie in forward areas for long periods discharging cargo. The certainties of delivery of vital war supplies, and the safety of the carrier itself, would be greatly enhanced by improvements in vessel design permitting speedier evacuation of its contents. Here we have a pressing need for commercial purposes and a vital prospective need for military purposes.

Foreign Competition

The problems of maintaining a merchant marine adequate for national security, and the responsibilities of world leadership are not easy to solve. Our American standards of wages, crew quarters and subsistence, working conditions for seamen, maintenance of safety, regulations, etc., impose substantially higher standards and costs on American operators. Unless these are compensated in some manner there cannot exist a realistic, competitive opportunity for American ships in the foreign trades. Plainly, private enterprise cannot absorb substantially higher construction and operating costs while quoting freight rates and passenger fares on the level of the low-cost foreign carrier.

I would like at this point to say a brief word about the cost of government aid in building and maintaining our merchant fleet. Shipbuilding and ship operating subsidies have not proved extravagant. Senate Document No. 13 of the 80th Congress shows that the total Federal subsidy payments to all business and farmers in the years 1936-1944 amounted to 3½ billion dollars. Of this amount the shipbuilding subsidy represented 2.7 per cent and the ship operating subsidy less than *a quarter of 1 per cent.* Federal subsidies during this period paid to agriculture, dairying, livestock, petroleum, sugar, wheat and flour each exceeded the combined subsidies paid to shipbuilding and shipoperation. Almost every item reported upon in the Senate document exceeded the cost of our ship operating subsidy, including among others, cheddar cheese, butter, wool, oilseed and products, preserving fruits, and the like.

This very modest cost of maintaining our shipyards and foreign-trading shipping lines should be contrasted with the extremely expensive ship construction programs provided to meet the national defense requirements of two world wars. In World War II we built merchant ships of over 55 million deadweight tons, at a cost of more than 15 billion dollars. Even if the cost of subsidizing American shipbuilding and shipping shall in the future be twice the amount per year as in the past, it would take approximately 250 years to absorb the amount of taxpayers money which was hastily and uneconomically spent to build the emergency fleet during World War II.

Shipbuilding

Statements issued by the Shipbuilders Council of America show the backlog of new construction in our American shipyards is sadly lacking. It would appear that unless additional orders are placed there will be only 17 merchant vessels of 1,000 gross tons or over under construction in the United States after June 30. Six of these will be of our new passenger ship program. One will be the prototype ship, and the remainder consists of ten oil tankers in various stages of completion. It is highly essential both for the maintenance of our merchant shipping fleet and for the defense of the nation that our shipyards be kept busy. It therefore behooves every person engaged in or connected with the maritime industry to lend every aid in efforts to bring about sound economic conditions related to ocean transportation which will promore the building of ships necessary to balance, maintain, and progressively increase our merchant marine, and provide the backlog of work necessary for the successful and continuous operation of our great shipbuilding plants.

During the last session of the Congress, a bill was introduced in response to the suggestion of the President, that the shipping industry's cooperation be sought to build the required ships on terms consonant with sound business principles, and, using the language of the President's advisory committee on merchant marine "receiving help from the government only to the extent necessary to put it on a fair competitive basis in foreign trade and protect it from discrimination in domestic trade." This legislation which was reported without objection by the merchant marine and fisheries com-

(Please turn to page 105)

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Broz Sales Manager at Nordberg

Joseph G. Broz

The appointment of Jos. G. Broz as sales manager of the Four Cycle Diesel Engine Department is announced by R. W. Bayerlein, vice president of the Heavy Machinery Division, Nordberg Manufacturing Co., Milwaukee.

Broz was vice president in charge of sales of Busch-Sulzer Diesel Engine Company of St. Louis, Mo., at the time that company was purchased by Nordberg in December, 1946. Until his present appointment Broz was surveying South American market potentialities and establishing field sales and service organizations there for Nordberg.

Prior to his association with Busch-Sulzer, Broz was with Baldwin Locomotive Works from 1930 to 1944. He was manager in charge of sales and service of diesel, electric and mine locomotives and Diesel engines at Baldwin and also sales manager and director of Baldwin-De La Vergne Sales Corp.

H. M. Cahill will assist Broz in directing the sales activities of Nordberg's Four Cycle Diesel Engine Department.

Matson Freight Traffic Appointments

Freight Traffic appointments have been announced by E. J. Bradley, Vice President, Freight Traffic, Matson Lines, in connection with a reorganization of the Freight Traffic Department. New appointments are as follows:

Allen C. Brown, Freight Traffic Manager, Matson Navigation Company, with headquarters at San Francisco; A. E. Fridberg, Freight Traffic Manager, The Oceanic Steamship Company, with headquarters at San Francisco; J. B. Banning, Freight Traffic Manager, Matson Navigation Company and The Oceanic Steamship Company for Southern California; J. T. Cavanagh, Assistant Freight Traffic Manager, Matson Navigation Company and The Oceanic Steamship Company, with headquarters at San Francisco; M. E. Kienappel, Assistant Freight Traffic Manager, Matson Navigation Company and The Oceanic Steamship Company, Chicago; C. C. Byrne, Assistant to Vice President, Freight Traffic, Matson Navigation Company, San Francisco.

Bradley said that with all of Matson Line's freighters now on their regular scheduled runs and with the outlook of "Peace on the Waterfront" for the next several years, the Freight Department is now geared to the modern conception of proper freight traffic organization in order to properly serve the shipper.

Bulletin on Nordberg Radial Engine

The publication of a new bulletin on the Nordberg Radial Engine is announced by Nordberg Manufacturing Co., Milwaukee.

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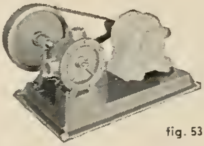

fig. 53

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The Merchant Marine

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mittee of the House of Representatives, in effect contained provisions designed to produce such economic conditions by clarifying and amplifying amendments within the frame work of the Merchant Marine Act of 1936. The bill is on the calendar of the House for attention as soon as the Congress reconvenes, and we have assurances that it will be given prompt attention in the Senate as soon as the bill shall have passed the House. These amendments, which fully meet President Truman's admonition and the sound advice of the President's advisory committee are expected to provide encouragement for the building of additional ships needed to balance and increase our merchant ship fleet.

Japanese and German Shipping

Very briefly I want to inject the question of the revival of Japanese and German shipping. We believe the most vital shipping question in those nationas is the rebuilding of their *domestic fleets* to serve *their own internal economy;* and, that thereafter their participation in the international trades should bear a relationship to the revival of their own foreign commerce. It would be dangerous, upon some theory of earning foreign exchange, to permit these nations to rebuild their merchant fleets to compete for the commerce *of other* nations. I do not need to point out the unfortunate incidents and irritations which might thereby develop. Japan and Germany are largely under military control, and, unfortunately our high military authorities are sometimes extremely objective. They at times see only the revival of the economy of these countries and the reduction of their financial dependence upon the United States rather than the long-range effect.

The United States stands today the last bulwark of a Simon-pure democracy. Upon us has fallen the mantle of protecting the traditional American freedom, and aiding in the protection of that same freedom in other liberty-loving nations. Unless we ourselves are strong, we cannot give the aid expected of us.

The present strength and virility of the United States is not the product of indolence or spendthriftness. Only by cooperation between government and business and by the exercise of effort, intelligence and thrift can we hope to maintain our position and set an important example in world leadership.

And finally, our private enterprise system is definitely on trial as the living example of freedom of initiative; rewards proportionate to accomplishments; and the dignity of man. Unless private capital builds the ships, carries the commerce and helps to defend the nation, we will give support to those who advocate the socialistic or nationalistic state. When those who would destroy our American institutions are making their greatest effort, let history record (to use Mr. Churchill's phrase), that this was "our finest hour."

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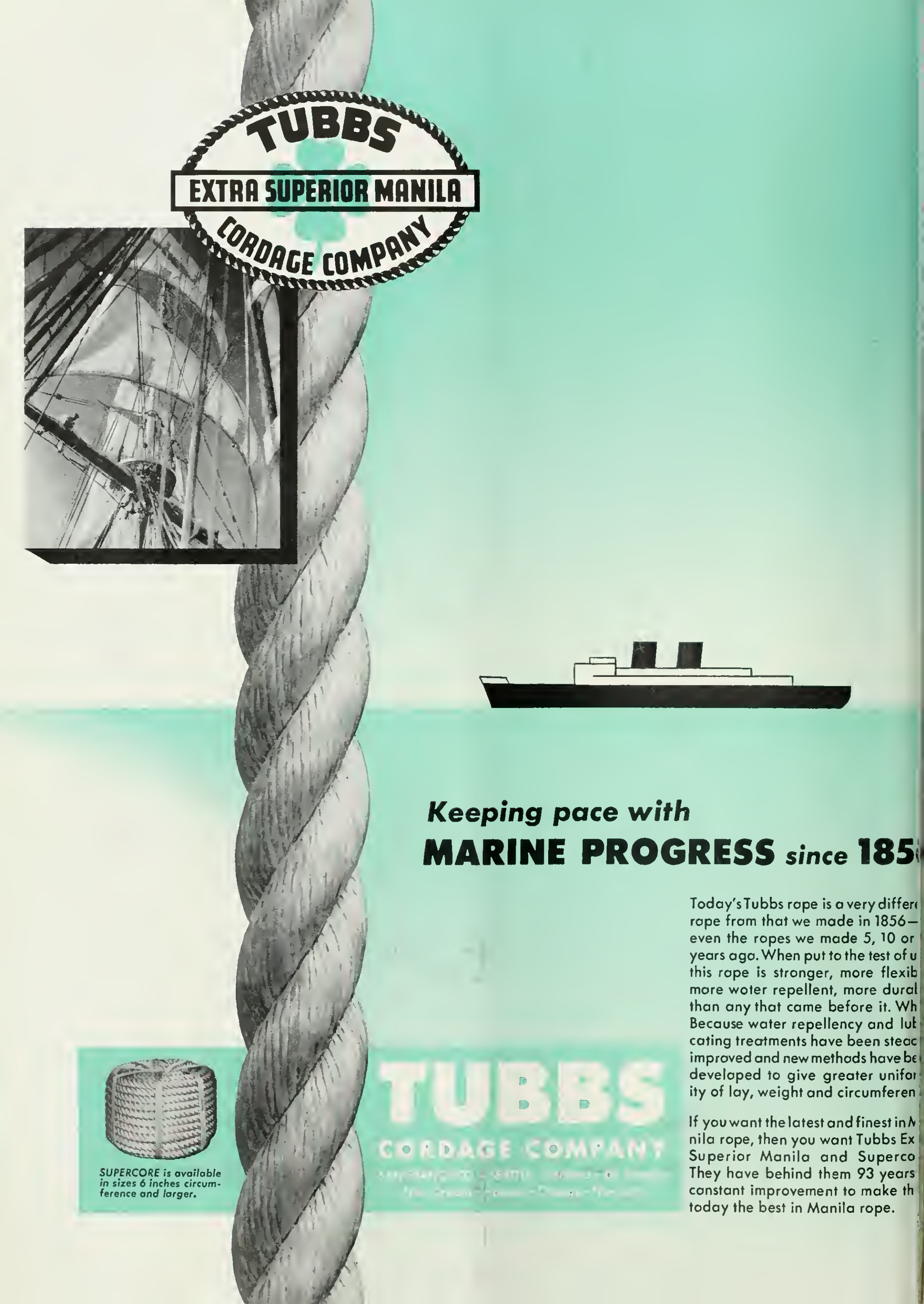

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Pacific MARINE REVIEW

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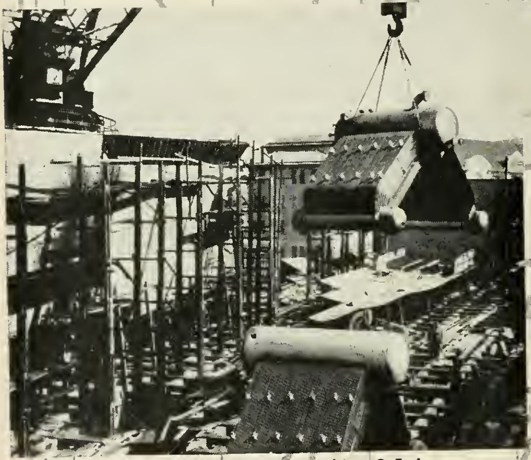
C. T. Amazonas after launching at Rio de Janeiro.



B&W boiler pressure parts being hoisted into C. T. Amazonas.

Good Steam

FOR A GOOD NEIGHBOR

Installation of B&W Boilers and other equipment aboard new naval vessels for the United States of Brazil is proceeding at the Navy Yard in Rio de Janeiro. The *Amazonas,* shown here, and sister ships *Araguaia, Ajuricaba, Araguari, Acre,* and *Apa,* comprise this newest complement of six Contra Torpedeiros (Torpedo-Boat Destroyers) for the Brazilian fleet.

Selection of B&W Boilers to power these "good neighbor" vessels is understandable, because satisfying the exacting steam requirements aboard *all* types of ships is a 70-year-old story with B&W. This experience is one reason why B&W steam has been the leading choice for so many other ships launched, re-boilered, or converted before, during and after the war . . . in river, lake, and ocean service.

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Our Cities And Maritime Public Relations

Pacific Marine Review

IS there anything odd about the twenty biggest cities in the United States? Can you name them? We all should know them, for in our industry they have great significance: *They are all ports,* and are dependent on water transportation for their prosperity. Without it they would never have been founded.

These cities have a duty to themselves which they are not performing. As with any individual in the "shirt sleeves to shirt sleeves" cycle, the best that the cities' maritime past seems to merit is a sneer.

It is true that city populations are changing. The influx from the farms and from immigration has served to diminish our appreciation for the struggles of our port founders and pioneer ship operators—and for those who are fighting back upstream against deliberately stirred currents. Ship operators, ship builders, and port managers—heroes of industry in their own right—are regarded as little more than periodic headaches by city governments, citizens in general, and—hard to realize—many business and labor groups whose every dollar stems from shipping.

Some cities value their ports, at least in the development stages. Los Angeles, for instance, spent a fortune to bring the port toward the city thirty miles away and then went to meet it. Houston is mushrooming in size after bringing shipping to its door. But enthusiasms wane, and critics will be heard muttering that the "interior" of the country is not "merchant marine minded." The cities themselves are not merchant marine minded, and it is time they woke up.

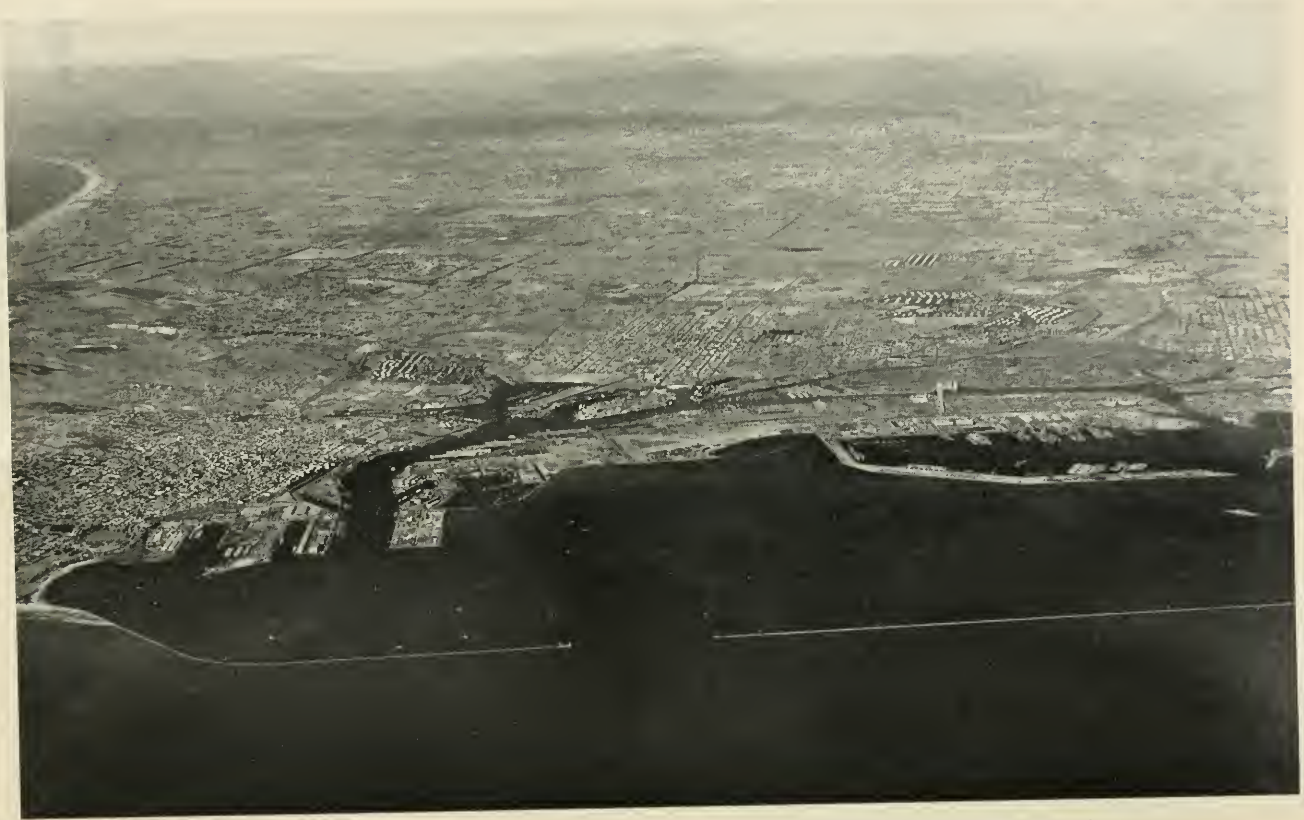
It is time the maritime industry forced them to wake up. When some major attack is made on a port installation, like the threatened closing of a Navy yard, public opinion is aroused and strong defenses are developed. But when the whole industry is threatened by indirection, as depressed rate competition, or diverted shipbuilding, or subsidized foreign shipping, or canal tolls, or strikes, or the underwriting of competition, or just plain misinformation in budget messages, the *cities* of the country—at least the twenty biggest—should form some sort of unit in defense of their birthright that would force a continuing recognition of the basis of their prosperity, their ports and shipping.

Industry should participate in this. Banking, insurance, manufacturing, agriculture, importing and exporting, and every group which channels its activities through the cities, or lives in or through city support, have all been idly watching the shipping associations put up their brave fight on one or another of their problems, winning temporary victories while the glaciers of disinterest move on. When the ICC can increase rail rates (as it did last month) *because water competition has been withdrawn,* and announce that the rates will be lowered *if water competition is resumed,* the whole country should arouse itself to the importance of shipping.

This industry of ours merits better support, whether against the encroachments of government departments or mere inattention on the part of city governments, city newspapers, or Chambers of Commerce.

There are ways of convincing all of these that their interests are in their port facilities and shipping. It is up to the industry itself to find these ways.

(The twenty biggest cities: New York, Chicago, Philadelphia, Detroit, Los Angeles, Cleveland, Baltimore, St. Louis, Boston, Pittsburgh, San Francisco, Milwaukee, Buffalo, Minneapolis, Cincinnati, New Orleans, Newark, Kansas City, Houston, Seattle. Washington, D. C. should be in the middle of this list somewhere but may be considered an exception, not having been founded on commercial activity.)



From the mountains to the sea — high altitude view of Los Angeles $100,000,000 harbor showing 1,500 square miles of contiguous territory. Main channel, 1,000 feet wide, and West Basin Wilmington District, shows up clearly.

The Port of Los Angeles

LOS ANGELES is one of the earliest ports of call for ships. It was visited in October, 1542, by Juan Rodriguez Cabrillo, a Portuguese navigator sailing under the Spanish flag. He named it Bahia de los Fumos (Bay of Smokes) because of the presence of smoke from brush the Indians were burning on the hillside. Sixty years later, in 1603, Sebastian Viscaino, a Spaniard, visited the harbor and renamed it Ensenada de San Andreas. This was later changed to San Pedro. The City of Los Angeles was founded in 1781.

The first commercial transaction in the harbor took place in 1805, when the ship *Leila Byrd,* of Boston, dropped anchor in San Pedro Bay to trade cloth, sugar, and household goods for hides and tallow from the missions.

Port of Los Angeles is the front door to a Southern California population of 5,696,700 (Federal estimate July, 1947). It is a great funnel for commerce, supplying the needs of 18,000,000 persons living in the eleven Western States. Since 1899, when the first barge load of rock was dumped off Point Fermin, San Pedro, for the outer harbor breakwater, a great facility has developed from mud flats to 2,770 acres of land of which 1,654 acres is a highly engineered area of modern terminals, warehouses, railroads, highways, docks, channel slips, turning basins, wharves and piers.

Situated 20 miles south of the Los Angeles City Hall, Port of Los Angeles is reached by six great highway arteries converging in the three harbor districts. Great manufacturing and industrial areas in Los Angeles, its suburbs and neighboring cities, are connected directly by railroad and highway to Port of Los Angeles.

The port is composed of three districts: Terminal Island and San Pedro, the outer harbor; and the Wilmington district, the inner harbor. The outer harbor has approximately 981 acres of channel and anchorage area behind protecting breakwaters. The inner harbor, with a total water area of 804 acres, consists of a series of channels 250 to 1,000 feet in width, with turning basins and numerous slips.

The consolidation of the municipalities of San Pedro and Wilmington with Los Angeles in 1909 brought the port within the control of the latter and paved the way for large-scale port development. The development of the port up to the time of consolidation may be ascribed largely to private industry, with the exception of the work done by the Federal government.

Up to 1948, the Federal governments expenditures on the Port of Los Angeles totaled $26,000,000 and the City of Los Angeles had invested $70,000,000. The principal projects of the government were the development of jetties, dredging, storm silt diversion, widening the main channel and construction of a breakwater and other units for government use.

The Port of Los Angeles, which serves the biggest concentration of population and industry west of the Mississippi River, has accommodated as high as 8,400 ships in a year. At least twenty-five per cent have been foreign flagships serving world trade.

Nine Top Industries Dependent on Port

Los Angeles has nine predominant industries and all of them are dependent one way or another on shipping through Port of Los Angeles. They rank as follows:

Industry	*Rank Nationally*
Aircraft	1st in U. S.
Motion Pictures	1st in U. S.
Oil Well Equipment and Tools	1st in U. S.
Auto Assembly	2nd in U. S.
Rubber Tires, etc.	2nd in U. S.
Food Processing	3rd in U. S.
Petroleum Refining	3rd in U. S.
Apparel	4th in U. S.
Furniture and Wood Products	4th in U. S.

The Port and Petroleum

Two major events, happening at widely separate times, combined to make Los Angeles Harbor the largest oil exporting port. Oil was first discovered in Pico Canyon in 1875, and with that the Southland entered a new period of industrial growth. With the beginning of today's modern port in 1899, the way was paved to ship the oil which annually exceeds 10,000,000 tons—75,000,000 barrels—with by-products valued at nearly $200,000,000. In addition bunkers accounted for 2,000,000 tons. Receipts of bulk oil add several million tons to be handled through the harbor.

Today petroleum ranks third among Southern California's industries. The value is more than $500,000,000. It supplies two-fifths of the world's needs. Water transportation has contributed to the growth of the petroleum industry by providing efficient, economical channels of distribution. In turn it has been the means for importation of large quantities of pipe, steel and materials for drilling wells, construction of pipe lines, tank farms and refineries, for manufacture locally of drilling equipment and tools and for the exportation of heavy tonnage of oil well supplies and machinery.

The wealth of faraway places is exchanged for oil wealth loaded on tankers in Los Angeles Harbor. The biggest customers last year were: Japan (133,404 tons), Canada (126,600 tons), Alaska (67,029 tons), and Philippines (55,676 tons). Eleven large oil companies operate their own modern terminals at the port. Vessels may bunker or load oil cargoes. All oil docks are equipped with pipe lines from the refineries or storage facilities. There is ample berthing space and bunkering barges to accommodate deep-water vessels.

The Port and Fishing

For the past several years, the Port of Los Angeles has been the top-ranking fishing port in the United States—both in weight of fish landed and in value of the catch.

Landings at Los Angeles in 1946 totaled approximately 580,000,000 pounds, with a value to fishermen estimated to be at least $18,000,000. These included most of the pilchards and mackerel, and nearly half of the tuna, landed on the Pacific Coast.

Ten nationally known packing plants have been granted leases at the Port, requiring the services of more than 3,000 cannery workers, with an annual payroll of $2,500,000. Fleet employees number about 2,500 and annual payroll of more than $5,000,000.

A separate slip, protected by secondary breakwaters, has been constructed at the southwesterly end of Terminal Island to provide mooring facilities for the exclusive use of the fishing industry.

Fish canneries, boat building and repair yards, and oil and ice servicing stations are located in this facility to serve more than 1,200 fishing boats operating out of this port.

A Municipal Fish Market and Wharf is provided on the San Pedro side of the Main Channel to accommodate wholesalers of fresh fish.

The Port and Agriculture

California's biggest single agricultural crop is now cotton, and Los Angeles Harbor exported 10,196 tons of raw cotton last year. In 1947 the value of the total yield was $140,000,000. Cotton comes to the harbor from gins near the fields in San Joaquin County and the Imperial Valley. The 500-pound bales pass through high-density compressors and are reduced to one-third former size.

The Western Compress Company, formed by the principal cotton shippers in Los Angeles, operates two Webb high-density steam compressors, each with a capacity of 100 bales per hour.

The warehouse space of this company totals 12 acres,

Docks and transit sheds on Terminal Island where ocean liners from all world trade routes unload and load cargo. Los Angeles Harbor has a total of 23 transit sheds to facilitate world trade.

Los Angeles Harbor, Terminal Island and San Pedro are shown in this aerial view. The Harbor that was "Planned and Built" for shipping is a highly developed facility protected by an 8-mile federal breakwater.

all under one roof, in which 125,000 bales of cotton can be stored at one time.

The world is hungry and the world needs clothing. California farmers have more than enough to help feed and clothe the peoples of the Pacific, Asia and Western Europe.

Products of our ranches and farms and citrus groves totaling $50,000,000 this year found their way to other countries through the trade routes branching out to the world from Port of Los Angeles.

Oranges, lemons, grapefruit . . . cotton, walnuts and rice . . . meat, milk, cheese and eggs . . . leather manufactures . . . grains and grain preparations . . . fresh, dried and canned fruit . . . that was the tremendous horn of plenty poured out to Pacific Asia, South America and other areas of the globe. Grains and grain preparations totaling 17,321 tons were shipped abroad last year.

California export figures for fruit this year showed that 7,200,000 boxes of oranges, 480,000 boxes of lemons and 460,000 boxes of grapefruit were shipped to world markets. In dried fruit, mostly raisins and prunes, 200,000 tons were sent abroad. A total of 24,476 tons of citrus was exported through Los Angeles Harbor.

The Port and Dry Docks and Shipbuilding

Two shipbuilding companies, with their enormous dry docks, have been fixtures at the Port of Los Angeles for many years.

The Todd Shipyards Corporation operates a large and completely equipped shipbuilding and repair plant in West Basin, Inner Harbor. This plant has two dry docks —one with a lifting capacity of 12,000 tons and the other 18,000 tons—as well as marine railways for handling smaller craft.

This plant is also equipped with eight whirly cranes of 25 to 50 tons capacity. This company occupies approximately 84 acres.

The Bethlehem Pacific Coast Steel Co., Shipbuilding Division, is located on Terminal Island, at the entrance to the Port of Los Angeles, making it possible for the largest vessel to be handled in and out of the plant with safety and dispatch.

This plant's floating drydock has a lifting capacity of 15,000 tons. The plant covers 38 acres and constitutes a unit in the nation-wide Bethlehem Steel Corporation.

The Port and Machinery

Machinery to make the world's wheels go round might well be the slogan for Los Angeles, first in the manufacture of oil tools and equipment. It is the second largest export category for Los Angeles Harbor, varying in value from $10,000,000 to $20,000,000 a year.

Since the close of the war, $172,000,000 has been invested in new Los Angeles County factories, but $192,000,000 has been invested in expanding existing factories.

Machinery products that left the port aboard vessels flying the flags of almost every country in the world this year were electrical, engines and turbines, conveying, mining, well, pumping, oil drilling, tractors and trucks. Many other machinery products were destined to world ports, there to manufacture food, clothe and industrialize the peoples of lands thousands of miles away.

The staggering total of 79,068,629 pounds of machinery equipment filled the holds of thousands of vessels that nosed out to sea past the harbor destined to the Middle East, Central and South America and Pacific Basin countries.

The Port and Imports

Copra and Vegetable Oils

Special equipment is available at the Port of Los Angeles for handling bulk cargoes, consisting of copra (dried meat of the coconut), soya beans, sesame seeds, kopak seed, hemp seed, flaxseed, and related oil producing vegetable products from the Orient, the Antipodes, the Philippines and the Straits Settlements.

The Vegetable Oil Products Company, Ltd., the Los

Angeles Soap Company, and the latter's subsidiary, the Copra Oil & Meal Company, Ltd., are major importers, refiners and manufacturers of the oil distributed to Southern California and other large manufacturing centers of the United States.

Walnuts

California walnuts are in great demand in all parts of the world. Most of those exported pass through the Port of Los Angeles to principal ports and market centers in Canada, Central and South America, Europe, Union of South Africa, Egypt and other insular points in both the Atlantic and Pacific Oceans.

The total annual export volume of California walnuts shipped through Los Angeles Harbor in normal times is approximately 5,000,000 pounds, valued at approximately three quarters of a million dollars.

Cotton

Cotton is California's third most valuable farm product, and a major export item. It comes to the harbor from gins near the fields in 500 pound bales, which are passed through high density compressors and reduced to one-third their former size.

Banana Imports

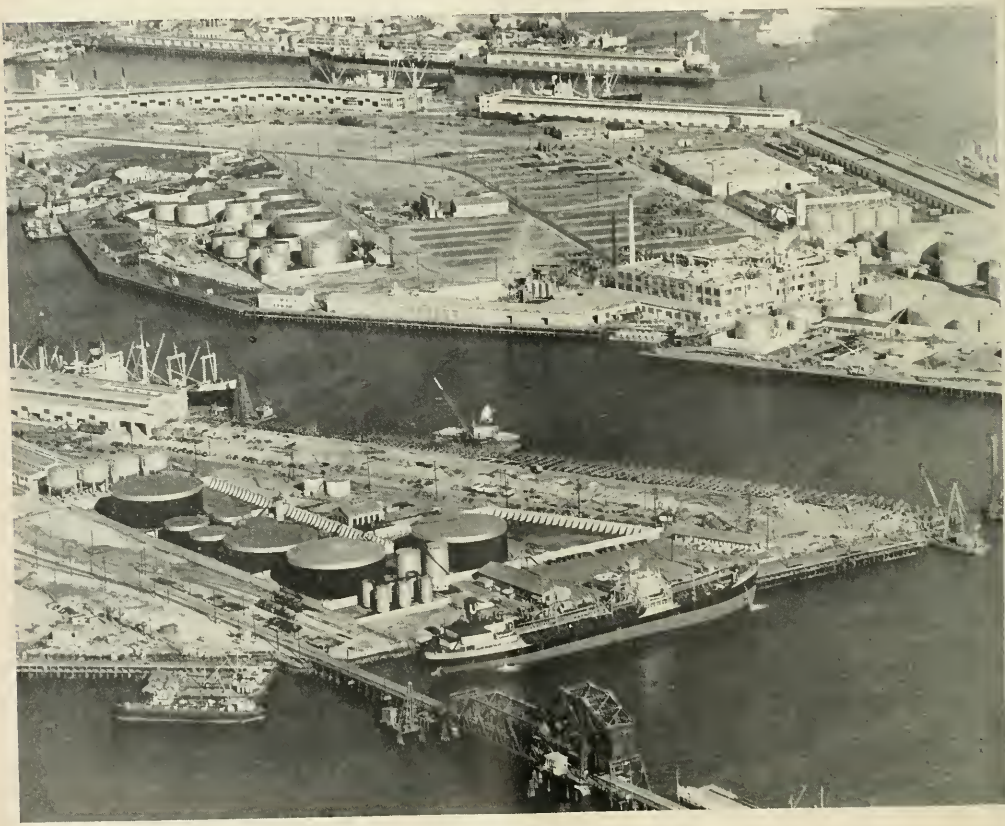
Special facilities were constructed in 1927 to handle Central American bananas, which are distributed throughout the West and Southwest by rail and truck.

Belt conveyors, leading directly from the vessel to refrigerator cars spotted alongside the conveyor sheds on shore, permit the simultaneous loading of 60 refrigerator cars in approximately two hours. An entire ship's cargo of 3,000 tons can be loaded direct to cars without loss or delay.

This traffic was pioneered by the United Fruit Company when, in 1927, they placed five ships in operation between Central American ports and the Port of Los Angeles.

This service has been augmented by the introduction of newer and larger ships, turbo-electric driven, capable of a speed of 20 knots.

Here is shown one of fourteen tanker loading stations in Los Angeles Harbor, at the juncture of the turning basin, Slip No. 1 and West Basin. For years the Port of Los Angeles has been the largest oil port for shipping, both in bunkering and export, in the world.



Shipping Through Los Angeles Harbor

By KENNETH L. VORE
Manager, Transportation Department,
Los Angeles Chamber of Commerce

JUST as Los Angeles has often been termed the "City of Destiny" so has its port been referred to as "Los Angeles Harbor—The Port of Destiny."

Located approximately twenty miles from the heart of the city, Los Angeles Harbor is one of the greatest man-made projects in the west. This entire project, planned and built for shipping, is an ever-expanding facility dedicated to our coastwise, intercoastal and offshore commerce.

Los Angeles Harbor serves the largest concentration of population west of the Mississippi River. At the close of 1949, Los Angeles was considered the third largest manufacturing district in number of factories and fifth in value of products in the United States. In order to serve this vast industrial concentration, the port has been enlarged and expanded under aggressive management until it now comprises 2,770 acres of land; of which 1,654 acres have been developed into a vast area of railroad tracks, highways, docks, terminals, and warehouses. During 1949 the number of commercial ships entering Los Angeles harbor averaged more than 250 ships a month.

New construction and expansion never ceases at Los Angeles Harbor. The year 1950 will see even greater activity with regard to passenger-cargo marine terminals. The two largest facilities now under construction are the $4,300,000 passenger-cargo terminal to be assigned to American President Lines and the $6,000,000 terminal for assignment to the Matson Navigation Company. Because the City owns and operates more than 95% of the improved wharf frontage at the port, both facilities will be built by the Los Angeles Harbor Department and assigned to these companies.

Los Angeles is in a unique position among the ports of the country with its waterfront twenty miles from the main business section of the city. This obviously involves unusual problems in connection with the handling of both through and local traffic.

Local traffic is handled by over 200 truck lines which serve the harbor area and the environs of Los Angeles. Through-rail traffic connecting with the main-line railroads is handled through the medium of a belt line railroad serving the marine terminals. The tracks of the Atchison, Topeka and Santa Fe Railway Company, the Southern Pacific, the Union Pacific, and the Pacific Electric Railway, extend from the city of Los Angeles to the port. The Harbor Belt Line Railroad serves as the intermediary. Steamship lines operating in the foreign and domestic trade to and from the port have direct connection with the transcontinental railroads serving the city and no lighterage or trucking is required at the port in connection with the interchange of traffic between water and rail carriers.

Kenneth L. Vore

One of the benefits to the shipping public consummated through the arrangement for belt-line operations was the granting of equal trackage rights through the agency of the belt line to the four rail carriers serving the port, with the right to use all railroad facilities within a zone of unified operations for the handling of their freight traffic. Under unified operation, the line-haul rates of the four railroad companies apply direct to or from any point within the zone without incurring any additional switching charges.

For many years, confusion and misunderstanding has existed with shippers at inland cities and on the eastern seaboard with respect to the correct billing point for shipments destined to Los Angeles, and for transhipment beyond. The names of San Pedro and Wilmington were so firmly fixed in the minds of the shippers that when Los Angeles Harbor developed there was uncertainty as to which name should be used.

In 1906, the city acquired a parcel of land one-half mile wide, and known as the "shoe-string strip," connecting San Pedro and Wilmington with Los Angeles. In 1909, the cities of San Pedro and Wilmington voted to become annexed to the city of Los Angeles, which brought about their consolidation with the city and thus gave Los Angeles the right to call the harbor area by its own name—Los Angeles Harbor, California.

The entire unified area is now constituted as one terminal and station under this name. The tariffs of the line-haul carriers serving the port, in addition to showing the station of Los Angeles Harbor, continue the station names of San Pedro, Wilmington, and East San Pedro

(Please turn to page 47)

World Traders Mean Business

By STANLEY T. OLAFSON
Manager, World Trade Department,
Los Angeles Chamber of Commerce

Stanley T. Olafson

THE SERVICES of the World Trade Department of the Los Angeles Chamber of Commerce are dedicated to the promoting of dollars-and-cents business for the exporters, importers, and industrialists of Los Angeles County. The energy and time expended by its staff are measured by a simple yardstick—What business will such expenditures of time and energy bring to our manufacturing, mining, and agricultural interests? Will the project produce tonnage for our ports? Will the effort develop tonnage for our shipping facilities to carry? Will our activities contribute to the employment and income of our wage earners?

Our premise is that world trade plays an important part in maintaining the prosperity of Los Angeles County. There is now a genuine appreciation by our citizens of the contribution the Harbor of Los Angeles has played in the building of our city and county since our port opened actively for business in 1919 following World War 1. Today Los Angeles, with a population of more than two million, is the third largest city in the United States. Los Angeles County has a population of more than four million, whereas Southern California, from Tehachapi to San Diego, is an empire supporting a total population of six million. It is a profitable market in which to *buy* and *sell*. The products of its farms, its factories, and its mines find their way to every corner of the globe and to all parts of our country by ships serving in our coastwise, intercoastal and foreign services. 115 steamship services connect us with 146 ports in 53 countries and export shipments are reaching 989 markets in 99 countries. During 1949 our water-borne exports totaled $300 million in value.

Los Angeles is buying more and more of the essential goods and raw materials the world can supply and which are needed by our industries. We well realize that this area must do its part in contributing to bring about a more equitable international trade balance and increasing the multilateral trade of the world. This can only be accomplished by encouraging producers abroad to endeavor to sell more of their goods here and by campaigning to develop an import-consciousness among our citizens generally. Our water-borne import commerce for 1949 is estimated at $150 million in value.

While the above shows our total water-borne world trade has reached approximately $450 million for 1949 through Los Angeles and Long Beach Harbors, that is not the total of our international trade. Actually world trade for Los Angeles County amounted to between $600 and $700 million for 1949. This higher amount is explained by adding the substantial value of our shipments to the Territories of Hawaii, Alaska, and Puerto Rico. We have important two-way trade with Mexico and Canada by rail. Considerable of our exports and imports still move through such ports as San Francisco, Oakland, New Orleans, and New York. We can not even estimate the value of our commerce to other ports of the world moving by air cargo. In the aircraft industries of Los Angeles County the cargo requires no transportation. It moves itself. Delivery for export of $50 to $75 millions of commercial and cargo planes is usually made at the plant, and native crews employed by the buyer fly these aircraft purchases to their final foreign destination. Recently there appeared in the press a statement that our motion picture industry received $150 million during 1949 as *income* from its distribution in foreign countries of motion picture film releases made in Hollywood. It has been stated that more than 100,000 people in Los Angeles County are employed in some way, directly or indirectly, in some phase of world trade operations. World trade is a stabilizing influence in our economy that must be maintained. It assists our industries to maintain operations at essential levels.

For 1950 the World Trade Department has an aggressive and intensive trade promotion program planned throughout the entire world in behalf of our community's world traders. Our exporters and manufacturers are conscious of the difficulties they are experiencing in obtaining payments in dollars for sales to foreign countries. Well known is the fact that foreign currencies are not freely convertible into American dollars. Goods can be sold freely, and selling is not today's problem. The number one problem is the competition to find buyers with American dollars abroad to pay for the goods we have to sell. Our world traders will energetically and intelligently, as good salesmen plan to get their share of the $11 billion worth of export sales promised as our country's total export business for 1950.

On the other hand, Los Angeles remembers that we have three non-contiguous American markets, the Territories of Alaska, Hawaii and Puerto Rico, to which during 1950 approximately one billion dollars worth of goods from the mainland will be sold and shipped. The Territory of Alaska will purchase about $400 million; the Territory of Hawaii will buy approximately $250 million, and the Territory of Puerto Rico will look to the mainland for nearly $350 million worth of merchandise and goods of all kinds. These markets have not been overlooked by the manufacturers of Los Angeles in the past, and successful business relations exist with our three buying territories. Splendid steamship services are available. We will intensify our sales promotion efforts in behalf of our industrial firms and our agricultural interests with these territories, and plans are being made to send personal representatives of our World Trade Department to survey these markets and call on the buying establishments and sales representatives and invite them to look to Los Angeles County as a source of supply of their needs. It is well realized, from previous favorable experiences, that there is no substitute for personal salesmanship. The best way to obtain business is to send out our trade commissioners into our Territories and into world markets with the resources of Los Angeles County in their sales kits.

Other plans for the development of promoting two-way world trade for Los Angeles during 1950 include:

LATIN AMERICA

1. Extensive development program on recommendations submitted by our sales emissary, William S. Rosecrans, Past President of the Los Angeles Chamber of Commerce, following his four-months' survey of principal commercial centers in South America and conferences with Chamber of Commerce officials and business leaders in the other American Republics from which trip he returned early in February.

IMPORTERS DIRECTORY IN SPANISH

2. Distribution in the other American Republics of our *Los Angeles County Directory of Importers* printed in Spanish and containing the names of 400 local importing firms and describing the goods they handle.

IMPORTERS DIRECTORY IN ENGLISH

Continuation of distribution of 10,000 copies throughout the world of our 24 page booklet, *Los Angeles County Directory of Importers,* printed in English to assist foreign manufacturers and suppliers of raw materials

(Please turn to page 47)

Harbor within a harbor — Leading fishing port in the world, Los Angeles Harbor houses a $160,000,000 fishing industry, part of which is shown in fish harbor, foreground, home of 14 canneries.

Foreign Trade Zone No. 4

By CLANCY DAYHOFF

Los Angeles Harbor Director of Public Relations

Clancy Dayhoff

THE Foreign Trade Zone No. 4 is physically a "Foreign Island" within Los Angeles Harbor, fenced off from other harbor property, where ships dock at the zone or truck and rail cars (from other berths at the port) may unload without payment of duty pending reshipment of goods abroad or entry into the United States. It is only when goods are moved out of the Foreign Trade Zone into domestic territory for United States' consumption that they become subject to customs duties.

Los Angeles Harbor's Foreign Trade Zone, Number 4 in the United States, granted under charter of the Foreign Trade Zones Board, opened in September, 1949. The land and water area, subject to expansion, consists of more than five acres.

For centuries, European ports have had such zones. Their existence goes back to the Hanseatic League of the Middle Ages. Hamburg and Danzig, on the northern coast of Europe and Hong Kong on the China coast, have had Foreign Trade Zones for many years.

The function of a zone is primarily to facilitate the handling of shipments in transit and awaiting ultimate distribution. Much world commerce, shipped on speculation to possible buyers, must be re-marked when sold. Processing, inspection, blending and grading of certain products may be necessary to meet domestic standards. These operations are facilitated at a Foreign Trade Zone in the country of import.

Shipments from 11 Foreign Countries valued at $1,236,467 have been received in Los Angeles Foreign Trade Zone since the opening of the zone September 9th, G. G. Oborn, Chief Accounting Employee of the Harbor Department, reported last month to the Board of Harbor Commissioners. Total shipments during the three-months operation amounted to 5,153,761 pounds.

Foreign cotton was the biggest poundage item in the Zone, of which 4,296,942 pounds were received. Other items included jewelry, artificial flowers, china and earthenware, pineapple, chemicals, watch movements, paintings and cork tile.

The wharf and shed at Berth 60, Outer Harbor, and an eastern tier of rooms on the first floor of warehouse No. 1 are utilized for the Foreign Trade Zone. A water area 75 by 682 feet in front of Berth 60 has been set aside for the zone. For the first three years it is expected that storage space will total 20,284 square feet. In the fourth and fifth years the storage space will be doubled. In the first three years of operation, ground area will be 5.24 acres, with a water area of 1.17 acres, to be increased by the fourth year to a total area of 8.62 acres. Capital investment for the zone will be $209,679 for the first year; $257,209 in the third year; $455,072 in the fifth year, and $538,973 by the end of the eighth year. It is believed that 100,000 tons of cargo can be handled in the space reserved for the zone the first year.

A loss of $57,557 is expected for the first year of operation. This will continue, it is believed, until the eighth year when a profit of $37,553 is anticipated. By the tenth year all losses will have been wiped out.

It is expected that the average shipment to be handled in the zone will be 20 tons.

A Free Trade Zone survey in 1947, compiled by Charles T. Leeds and Gerald C. Fitzgerald, Los Angeles consulting engineers, was based on replies to questionnaires sent to 2,022 importers, exporters, bankers, manufacturers, merchandisers, steamship operators, warehousemen, customs brokers and trade associations.

In addition to the questionnaire, the engineers conducted 130 personal interviews, as a result of which it is conservatively estimated a total of 482,220 tons of cargo will pass through the zone in from three to five years.

Of primary importance to Southern California is the fact the establishment of the Foreign Trade Zone will result in the rightful diversion of considerable commerce to this port from New York, New Orleans and San Francisco, where free zones already are in operation and where Los Angeles Commerce has cleared in the past.

The shed and wharf at Berth 60 is a free trade zone only when vessels are moored there receiving and discharging Foreign Trade Zone cargo, while at other

(Please turn to page 48)

The Marine Exchange

By HOWARD W. WOODRUFF

THE MARINE EXCHANGE OF LOS ANGELES-LONG BEACH HARBOR, Inc., serves the Southern California area with information concerning commercial ships working and moving in and out of Los Angeles-Long Beach Harbor.

Continuous 24-hour watch is maintained from a spot 100 feet above the main channel at its seaward entrance, commanding a view of both harbors and the sea approaches. The equipment includes a powerful Bausch & Lomb telescope, binoculars, large blinker light to communicate with vessels, and many shipping publications and registers to assist in locating and identifying merchant vessels.

After a ship is sighted there are upwards of fifty telephone reports made to interested parties who subscribe to the reports. Advice is given as to the arrival, and whether the ship is proceeding to anchor or some particular berth in either Los Angeles or Long Beach. Business concerns are thus in position to plan their activity with maximum efficiency and eliminate standby time for personnel, or extra wear and tear on equipment. The agents for the vessel, port pilots, tug boat dispatchers, and U. S. Public Health (Quarantine), Immigration and Customs services all need accurate and prompt information; otherwise, there is the possibility of delay to the ship and resulting extra expense.

There are now 170 regular subscribers, some using only one type of report, but many users requiring more

Los Angeles Harbor Foreign Trade Zone receiving cargo at Berths 59-60, outer harbor, San Pedro District. In foreground are the Grace Liners; Golden Gate, and La Plata. First shipments, totaling 600 tons, included pulp-wood, garbanzos (dried beans) and costume jewelry from Bankok, Thailand.

than one of the services offered. Fees charged are planned to encourage the widest possible use of the Exchange, and the cost to individual subscribers is relatively low.

Very complete telephone service connects the Exchange with subscribers—a direct line to the Metropolitan Los Angeles area, another to Long Beach, and several lines for the San Pedro, Wilmington and Terminal Island sections of Los Angeles. Data is sent by telegram to some distant points where prompt information is especially needed.

Record is made of the entrance through the breakwater of each commercial vessel, with detail of her flag, rig, net registered tonnage; whether tanker, passenger/cargo, lumber carrier; and port from which arriving, time entering port, berth to which proceeding, and the line or operator for which she sails. Departure data is recorded also through the "gate". These logs of arrival and departure have at times been used in court as evidence of the stay of particular ships in this area.

Information for the newspapers includes the list of active ships in port, also inactive ships, those which have sailed since the last list was provided, those due during the succeeding period. With each ship is shown the name of the line for which operating, the port from or to which sailing, and the anticipated sailing date. This copy is prepared twice daily for newspapers to meet the deadlines, and special arrangements are worked out to forward the copy with minimum delay.

Howard W. Woodruff, Manager of the Marine Exchange of Los Angeles-Long Beach, is a native of Newcastle, California. He served in the first World War, and in 1920 entered the shipping business with McCormick Steamship Company in San Francisco; then spent a year in Seattle, and went to Los Angeles in 1922, still with McCormick. He joined Williams, Dimond and Company six years later and became its local manager in 1943.

The Los Angeles Chamber of Commerce has been sponsoring the Marine Exchange since 1923. Los Angeles Port became Navy controlled in World War II, and when the Marine Exchange was reactivated in December, 1945, Woodruff became its manager.

Howard W. Woodruff

In addition to other reports, there is published for each working day a list carrying three days advance arrival information. It has great value to chandlers, bunkering companies, laundries, repair firms and a variety of concerns dealing with the ships. Subscribers are enabled to locate the proper agent for each ship and at the same time, without unnecessarily troubling the agent, can determine where and when to attend any vessel.

Details are worked out by two men constantly telephoning agents and checking publication from other ports which give an indication of vessel movements, so that those scheduled to call here may be identified and included in the Marine Exchange releases at the proper time.

Lookouts are Navy-trained signalmen, and with the blinker light are able to communicate with ships arriving when necessary to verify the identification. In emergencies they frequently assist those at anchor or inside the harbor which do not have the privilege of using the ship's radio.

The post of observation places lookouts in position to be the first observer of many accidents and casualties. Special attention is provided by emergency call lists; the port authorities, the agents vitally interested in the particular ship, the underwriters' representatives, shipyards, as well as the fire department if its service might be needed—all are given quick reports.

On a recent occasion notification was given the United States Coast Guard which resulted at least in the more speedy rescue of two men from a capsized fishing boat. At the time the SS *Harvard* went ashore at Point Arguello the Navy-trained lookout blinked a message to a new U. S. cruiser which had just dropped anchor after a trial run. The commanding officer recognized the emergency and cancelled all shore leave and liberty, and the cruiser was on her way in a few minutes making a quick run to the scene. At times people are spotted on the breakwater marooned due to heavy waves.

By contact with the United States Weather Bureau the Marine Exchange records weather conditions and displays storm warning signals for the area.

Through the cooperation of the oil companies, a weekly report is compiled of the bulk petroleum products shipped from the port and in turn most of the companies subscribe to the service. Data is provided each week ship by ship, with a breakdown for sailing data, berth at which loaded, the port to which destined and the number of barrels of 42 gallons of each grade of the commodities. Monthly recapitulation carries total quantities and some comparative figures. The year 1949 showed 81,242,114 barrels shipped by the petroleum companies.

Figures for all commercial ships reported during 1949 covered 4080 vessels. This does not include U. S. Navy or Government operated craft. By classes, the passenger/cargo group was 2657 ships, tankers 1224, lumber carriers 195, and miscellaneous (barges, etc.) 4.

Through the Los Angeles office of the Marine Exchange in the Chamber of Commerce general offices, general shipping information is given shippers, travelers and the general public. Schedules for the shipping lines and location of nearest representatives of lines are kept available. In cooperation with the Transportation Department and the World Trade Department of the Chamber of Commerce the possibility of shipping by water and in many cases the rates applicable can be worked out.

Many publications are received which assist in providing ready details affecting shippers. Accurate data is needed as shipping dates and time of delivery have a bearing on the placing of orders with local firms.

An activity which produces favorable attention for steamship lines consists of the display of house flags at special meetings. Most of the lines deposit a house flag with the Marine Exchange, and when affairs during World Trade Week, which includes National Maritime Day, or other maritime functions are planned at other times, the flags are shown to the best possible advantage, making a colorful and attractive setting. This has been done at meetings where 1000 of the public have been in attendance, and it is felt that favorable publicity is secured for the industry and the lines so represented, and also contributes to the difficult matter of educating the public as to the value and need for our merchant marine.

The operation of the Marine Exchange of Los Angeles-Long Beach Harbor may be considered unique. With the small staff of nine men reports are given to various types of business in accordance with the needs of each, and it is reassuring to hear from time to time that the ship reports are almost indispensible.

Shipping Through Los Angeles Harbor

(Continued from page 41)

in tariff indices with cross references to the official designation of Los Angeles Harbor, California, as a station. This method of publication was made for the purpose of avoiding confusion which might result due to the elimination from tariff publications of the familiar names previously well known to shippers generally as comprising the district known as Los Angeles Harbor.

Prior to this time, Sundays and holidays have been excluded in computing the free time for assembling outbound cargo and for removing inbound cargo at Los Angeles Harbor. The Los Angeles Board of Harbor Commissioners has just recently passed an ordinance, with the approval of the City Council, for also excluding Saturdays in computing the free time period. This will further assist shippers in reducing accessorial charges when shipping through Los Angeles Harbor.

The subject of reducing accessorial charges on overland import/export cargo at Los Angeles Harbor, and other Pacific Coast ports, has been the subject of concentrated study for the past year. Complaints have been heard among shippers in inland states with regard to the difficulty in ascertaining the exact charges which they will be required to pay for their shipment in addition to the ocean/rail rate. These charges are various accessorial charges required for car loading, car unloading, and other dock and harbor fees. Therefore, a plan was proposed to include in one rate the line-haul charges and all accessorial charges from point of origin to on-board the vessel.

There is a matter of great concern which must be worked upon continually if we are to facilitate the movement of tonnage through the port of Los Angeles, and that is the securing and publishing of equitable and competitive freight rates. Rate adjustments are necessary if we are to secure our proper share of trade in competition with other ports in common markets. A common meeting ground of cooperation is essential between the shipping public, harbor officials and the carriers if an equitable freight rate structure is to be maintained which will keep our port on a competitive basis.

The Port of Los Angeles has developed remarkably over the past forty years. The great harbor expansion program now underway, the tremendous industrial development of this area and the fabulous factory production will all help and can truly make Los Angeles Harbor a "Port of Destiny."

World Traders Mean Business

(Continued from page 43)

and semi-manufactured products to find a market in Southern California.

MEXICO

3. It is anticipated that the dollar shortage in Mexico will be alleviated during 1950, thereby offering renewed opportunities for the sale of our goods, which will permit greater services by our Chamber's Branch Office in Mexico City.

THE PACIFIC AREA

4. In spite of the troubled conditions in the Orient, our world traders are not overlooking the opportunities in Japan, Philippine Islands, Hong Kong, Siam, Indonesia, and India. Business is available in those markets in spite of reports to the contrary.

EUROPE

5. Los Angeles small business firms are participating in a greater degree in the E.C.A. financed business in Western Europe. Our Chamber plans to carry on a direct by-mail program with the many thousands of firms in the 18 European countries buying under the E.C.A. and informing such importers of the advantages of procuring their essential needs in this area.

DIRECTORY OF MANUFACTURERS

6. Coming off the press in February is the 1950 edition of our *Los Angeles County Directory of Manufacturers*. This directory contains names of nearly 10,000 local manufacturers with those marked who are specifically interested in selling in world markets. 2,000 copies will be mailed during February not only to buyers, importers, and sales agents, but to trade organizations, American Consulates, foreign banks, and steamship lines located in more than 300 commercial centers in 100 countries and areas throughout the world.

DIRECTORY OF EXPORTERS

7. During February, 4,000 copies of our 1950 *Los Angeles County Directory of Exporters* will be mailed to buyers throughout the world. This new publication, just off the press, contains names of nearly 500 firms engaged in the export business, showing the commodities

Swedish Ship Named for the Port

The Johnson Line's motorship "Los Angeles" which regularly makes the run from our Pacific Coast to Northern European ports.

Below: The plaque presented to the ship by the Los Angeles Harbor Commission and the Los Angeles Chamber of Commerce.

in which they are in an advantageous position to supply from this market.

WORLD TRADE OPPORTUNITIES BULLETIN

8. Mailing of our *World Trade Opportunities Bulletin* to 1200 manufacturers, producers, exporters, importers, and other local firms engaged in world trade will be continued. This weekly bulletin contains up-to-the minute helpful material of interest and value to local firms interested or engaged in international two-way sales operations. It also contains names of firms throughout the world giving a digest of the goods they have informed us they wish to buy or sell in this market.

Foreign Trade Zone No. 4

(Continued from page 44)

times the function will be that of an ordinary port facility. This is an important economic saving developed by the Board of Harbor Commissioners.

"From the viewpoint of the harbor management, a Foreign Trade Zone is not so much a money making facility for a harbor as it is an aid to increase commerce in a port," Arthur Eldridge, General Manager of Los Angeles Harbor has said. "There are numerous advantages to a free zone. Among them are: no expense for bonds or customs inspectors when imports are stored or manipulated, whether dutiable or non-dutiable; buyers may examine merchandise before purchasing; imports may remain in storage with no time limit; and substandard foreign products may be reconditioned before customs appraisal and liquidation."

Duties, Eldridge has point out, are paid only on the weight and quality at the time goods cross the customs boundary.

The Port of Los Angeles Prepares for the Future

Anticipating continued growth in population and resultant economic expansion—plus ever-increasing demand for more and more ships, to carry more and more cargo—Los Angeles Harbor Department officials are still using the yardstick of "Service to All the World" as their guide in planning ahead.

They are continuing to "Build on Purpose" by making ready the world's greatest man-made harbor for a busier tomorrow.

THE HARBOR COMMISSION

Top, left to right:

JAMES C. INGEBRETSEN, president. He graduated from Stanford University with A.B. and L.L.B. degrees, was General Counsel for the Los Angeles Chamber of Commerce from 1939 to 1942, and has been a member of the law firm Musick, Burrell and Ingebretsen since 1944.

JOHN B. CHADWICK, vice president. He is past president of the Wilmington Junior Chamber of Commerce; member of the Institute of Property Management; and past president of the Lions Club of Wilmington.

ARTHUR ELDRIDGE, General Manager of Los Angeles Harbor. He has served as Chief Clerk for the Board of Public Works, Secretary to Mayors Woodruff, Snyder and Cryer. In 1922 he became Director of Efficiency, served 10 years on the Board of Public Works, and the last 16 in his present post.

Bottom, left to right:

RALPH D. SWEENEY, Commissioner. He graduated from the United States Naval Academy in 1920, and from the University of Southern California School of Law in 1929. He is a member of the California Bar; Board of Governors of the California Maritime Academy, and a member of the World Trade, Naval Affairs and Harbor Committee of the Los Angeles Chamber of Commerce.

A. O. PEGG, San Pedro, Commissioner. He was appointed to the unexpired term of the late C. S. Sampson. He was formerly in charge of marine construction for the Union Oil Company, and prior to that served as assistant general manager of the California Shipbuilding Company.

KENNETH N. CHANTRY, Commissioner. He is a graduate of Stanford University with A.B. and L.L.B. degrees. A commander in the Navy in World War II, he was a Superior Court Judge during 1946, is President of the Fernando Alfalfa Milling Company, and a partner in the firm of Herzburn and Chantry.

Installing a Modern

MONTEREY BAY now boasts the most modern submarine filling station on the Pacific Coast—fuel oil for a 402,000 horsepower electric plant—out where the water is deep.

No blazing Neon signs here, no white jacketed attendants; only a half dozen buoys rising and falling as the ocean rollers march toward the distant land. But one day soon a big tank ship will tie up to those buoys and begin pumping thousands of barrels of fuel oil for operation of the big Moss Landing steam-electric powerhouse Pacific Gas and Electric

Submarine Oil Terminal

Company is completing on shore.

The utility company has finished laying the long underwater section of the pipe line that will transport the oil from the ocean filling station to the storage tanks adjoining the plant. One morning last month the Haviside No. 4, largest seagoing steel derrick barge on the Pacific Coast, especially designed for installation of submarine pipe lines and moorings, was towed by the tug H. T. Haviside from San Francisco. This barge, equipped with powerful winches, coils of steel cable and hemp hawsers, was anchored at a point 4500 feet off shore from Moss Landing.

In readiness on the beach that separates the harbor channel from the Bay lay tons of steel pipe, 18 inches in diameter and wrapped in a somastic coating to protect it against the ravages of salt water and sand. The pipe had been welded into sections, one 660 feet long and six 480 feet long and racked on carefully aligned supports.

A tug trailing astern a "messenger line" from the barge, approached the shore and with a rocket gun shot the end of the rope line the remaining distance to land. With the "messenger," heavier hemp ropes were pulled ashore and at last three steel cables from the barge were made fast to a land anchorage.

Then the land crews of riggers and welders went to work. The first section of pipe rode on wheeled cars that would ease the pipe into the water. The head end of the pipe rested on a sled frame with runners to keep it from digging into the bay bottom as it traveled. The pulling cables were attached to a bridle bolted to the pipe end and the long pull began. Three heavy-duty winches aboard the barge did the work.

When the first section was nearly all under water, the second, 480 feet long, was rolled into exact position and joined to the first by teams of welders. All day and through the night, despite high seas and icy wind, the crews of men continued the successive pulling and welding operations that finally brought the pipe-head to its resting place 50 feet under water at the anchorage 3500 feet from the shore end of the line.

The submarine pipe-laying called for exhaustive planning and exact timing and coordination. P. G. and E. engineers designed the project and engineers of Stone & Webster Engineering Corporation, builders of the Moss Landing plant, supervised its installation. Harry T. Haviside, veteran San Francisco Bay barge operator, directed all marine operations.

Design of the anchorage area is planned to provide a safe mooring for the oil tanker while it pumps its cargo into the pipe line at the rate of 8000 barrels an hour. The ship will be moored to five buoys held in permanent position by 8-ton anchors on the bay bottom. A 12-inch seahose, 200-feet long, was attached to the pipe line by a diver, its free end marked by a buoy in readiness to be hauled aboard ship before pumping is to be started. Some 1200 feet farther seaward a light and bell buoy will warn ship traffic of the anchorage position.

From its shore terminus the pipe will be connected to a 24-inch line extending under water across the harbor channel and a little more than half a mile to four 120,000 barrel storage tanks near the Moss Landing powerhouse. Each tank will hold a shipload of oil. When operated at full capacity the burners of the six gigantic boilers of the steam-electric plant will consume 13,500 barrels of oil every 24 hours.

The first 134,000 horsepower generating unit of the Moss Landing plant is scheduled for operation in April. Total generating capacity of the plant will be 402,000 horsepower.

CAPTIONS FOR PICTURES ON PAGE 50

LEFT, TOP: Attaching stout steel cable to the end of the pipe, the builders make the line ready to be towed 3500 feet offshore in Monterey Bay. Buoys temporarily attached to the pipe will mark its position in the water, and broad sled runners will keep it from digging into the floor of the sea.

LEFT, CENTER: The barge from which winches will tow the fuel oil pipeline into the water is anchored at the site of Pacific Gas & Electric's "submarine service station." The tug at right of barge will shoot a line ashore to make contact so that cables from the barge may be fastened to the end of the fuel oil line.

LEFT, BOTTOM: Pipe was welded into 480-foot sections beforehand and laid in rows on racks. The cranes are about to tug another length into place on the small cars on the track at left. After being welded to the end of the line at left of man in foreground, it will be towed seaward. Pacific Gas & Electric's new 402,000 horsepower Moss Landing Steam Plant is in right background.

RIGHT, TOP: As each 480-foot section of pipe was welded into the line, the joint was given a coating of mineral compound for protection against corrosion, and the barge in the distance offshore then hauled the line farther into the waves.

RIGHT, BOTTOM: Engineers of the submarine pipe line launching. Left to right: H. F. Cleary, manager of Moss Landing Power House project for Stone & Webster Engineering Corporation; Harry T. Haviside, president of Haviside Company and director of all marine operations; and his son, B. L. Haviside, vice president of Haviside Company, who was in charge of radio communications between land and marine equipment.

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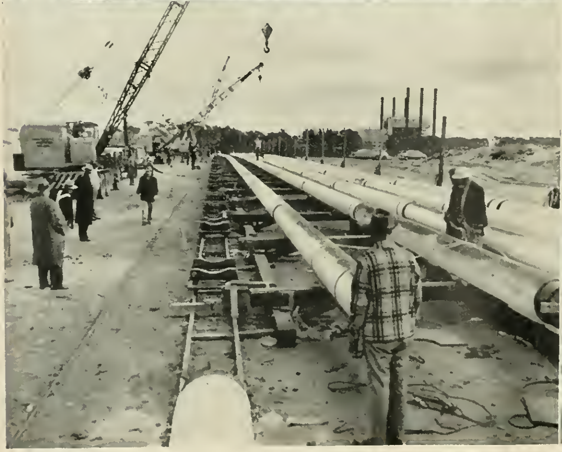

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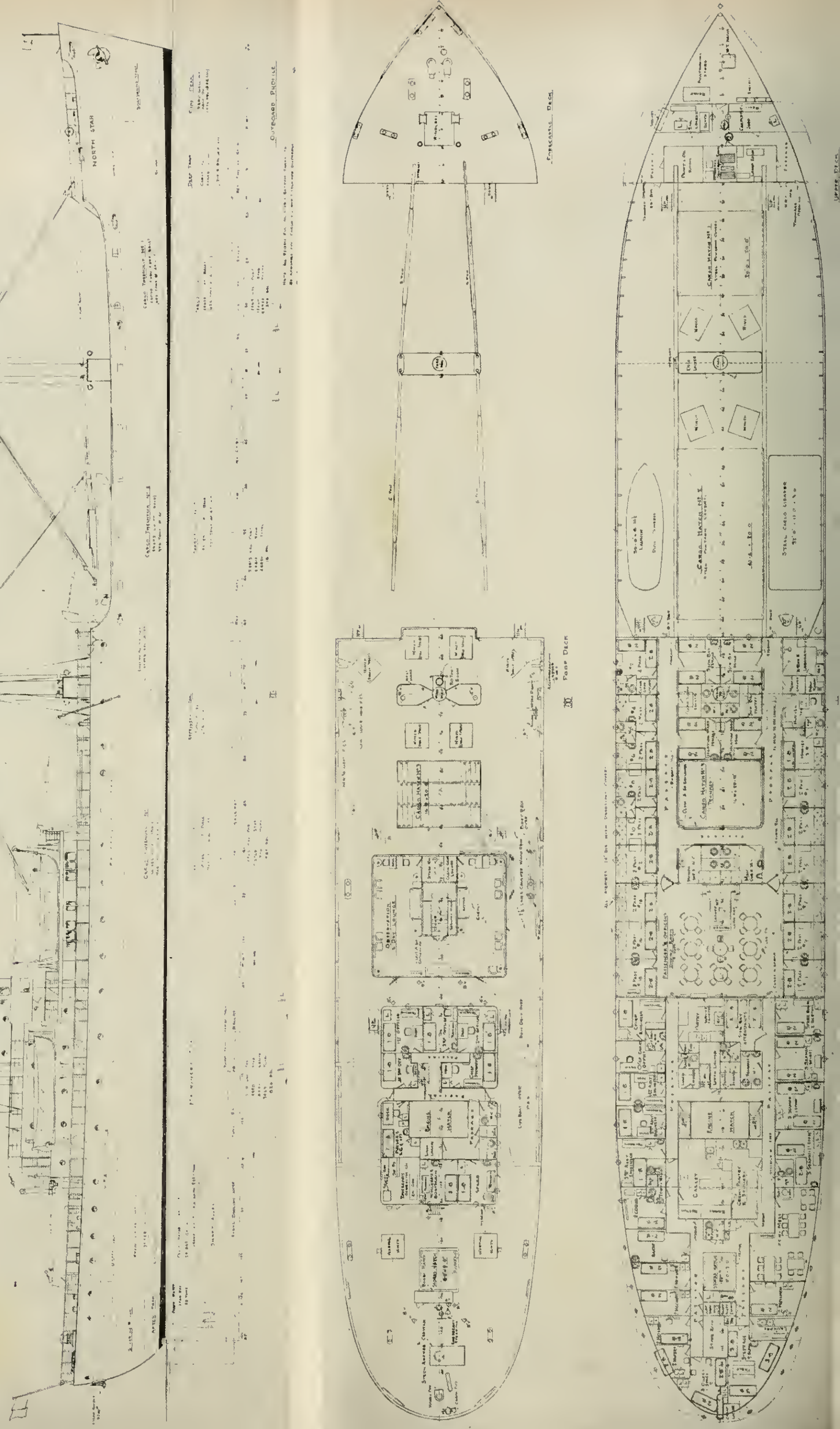
LEFT, TOP: Attaching stout steel cable to the end of the pipe, the builders make the line ready to be towed 3500 feet offshore in Monterey Bay. Buoys temporarily attached to the pipe will mark its position in the water, and broad sled runners will keep it from digging into the floor of the sea.

LEFT, CENTER: The barge from which winches will tow the fuel oil pipeline into the water is anchored at the site of Pacific Gas & Electric's "submarine service station." The tug at right of barge will shoot a line ashore to make contact so that cables from the barge may be fastened to the end of the fuel oil line.

LEFT, BOTTOM: Pipe was welded into 480-foot sections beforehand and laid in rows on racks. The cranes are about to tug another length into place on the small cars on the track at left. After being welded to the end of the line at left of man in foreground, it will be towed seaward. Pacific Gas & Electric's new 402,000 horsepower Moss Landing Steam Plant is in right background.

RIGHT, TOP: As each 480-foot section of pipe was welded into the line, the joint was given a coating of mineral compound for protection against corrosion, and the barge in the distance offshore then hauled the line farther into the waves.

RIGHT, BOTTOM: Engineers of the submarine pipe line launching. Left to right: H. F. Cleary, manager of Moss Landing Power House project for Stone & Webster Engineering Corporation; Harry T. Haviside, president of Haviside Company and director of all marine operations; and his son, B. L. Haviside, vice president of Haviside Company, who was in charge of radio communications between land and marine equipment.


NORTH STAR
Outboard Profile
Forecastle Deck
Poop Deck
Upper Deck
Cargo Hatch No 1
Cargo Hatch No 2
Cargo Hatch No 3
Observation & Owl Lounge
Engine Hatch
Galley
Passengers & Officers

"North Star" Conversion Completed

PRELIMINARILY described in the August Pacific Marine Review, one of the most interesting and important conversions of the year, completed this month, was started in May 1949 at Todd Shipyards Corporation, Seattle plant, altering MV *Coastal Rider*, a C1-M-AV1 freighter, to a combination vessel for the Alaska Native Service, Department of the Interior. The work involved rather extensive changes in the ship so that Native Service employees and government wards might be carried as passengers, and also to provide hospital facilities, and for the delivery of supplies to Alaska Native Service stations including those on Bering Sea, Wainwright and Point Barrow on the Arctic Ocean.

This was a two-installment conversion, with the possibility of still further increase in passengers' facilities at a future time. The first installment of the work was completed last July, following which she was put in temporary service to the far North.

Coincident with the first phase of the work, the vessel was renamed *North Star* and replaces the famous wooden motor ship *North Star,* built in 1932, which has been used in this service for many years, but which is, by reason of long service, no longer considered fit for the arduous voyage into the far north. The old *North Star* made annual voyages to Point Barrow except during the period of the Second World War, when she was in the Navy on the Greenland Patrol. Shortly before World War II she was used as a supply ship for the Byrd expedition to the South Polar Seas.

The *North Star* will carry a complement of 40, including 17 persons in the deck department, 10 in the engine department, 12 in the steward's department and 1 in the medical department. The 338-foot ship was built in 1945 of steel construction throughout, with Diesel engines aft, and grosses 3805 tons. She was transferred to the Alaska Native Service by the Maritime Commission and will carry at least three times as much freight as the old *North Star.*

In order to fit the new *North Star*, which is an all-welded steel vessel 338′ long, 50′ beam, and 29′ moulded depth, for her new duties, the whole bow was strengthened by doubling plates, intermediate frames, stem and forefoot reinforcement for navigation in the heavy ice frequently encountered around Point Barrow. While in no sense an ice breaker, she will frequently have to navigate in surface ice and push her way through ice floes. Since it is frequently necessary to clear water intakes of ice in slushy seas, steam connections were provided to all sea chests.

The new service requires space for thirty-two cabin passengers, hospital berths for sixteen, nurses' quarters, laboratory and x-ray facilities, all of which are provided above the main deck from amidships aft. Since all these quarters are above the main deck, little change was made in her cargo carrying capacity other than that the area for deck hands was reduced by approximately one-third. Covered space for the accommodations was provided by extending the poop forward from frame 104 to a little forward of amidships. The new construction was all forward of the navigating bridge, which remains virtually unchanged. The extended poop deck forms a pleasant promenade deck, much of which is sheltered by the extension of the boat deck to carry two additional 40-person oar-propelled Welin life boats. 2½-inch caulked wood deck was laid over the entire poop deck and boat deck. New Kearfott sliding windows were also installed.

The dining saloon, as the plans show, is just forward of the existing crew's quarters, which have been generally rearranged to provide for the service space and additional personnel required. A roomy and comfortable day lounge in a steel deck house was fitted directly above the dining saloon space which has been provided by reducing the length of No. 3 cargo hatch, trunked up through the accommodations.

In arranging the accommodations on the main deck, an interesting structural problem presented itself, since the original design of the ship was such that No. 3 tween deck and hold were virtually free of pillars, with long span girders above the main deck, forming the coamings of No. 3 cargo hatch. Since these long hatch coamings had to be removed, the entire structure support of the main deck and the new superstructure above it had to be completely redesigned, using shorter span girders and pipe pillars in the holds. These are so arranged that interference with stowage of cargo is minor, yet the vessel's hull is well stiffened and supported throughout the area.

In order to care for the added hotel load, a pantry was fitted to serve the main dining saloon, most of the galley sheet metal work was replaced, and the oil-burning range replaced by a new Lang electric range of large capacity. Additional store spaces are provided, notably in way of old cargo hatch No. 4 which was suppressed. All food service is on one deck, thus eliminating dumbwaiters and stairway travel for mess attendants. Special provision has been made for food service to isolation ward patients with contagious diseases so that none of the dishes, cutlery, etc. used for their service need find its way contaminated back to the galley since sterlizing equipment for completely servicing these dishes is provided in the sick bay pantry.

The existing cargo cold storage space is in hold No. 4

(Please turn to page 116)

◀ Outboard profile of "North Star" showing inboard general arrangements; also deck plans showing accommodations and officer quarters at the completion of the second stage of conversion. Plans prepared and furnished by Naval Architect Carl J. Nordstrom of Seattle.

The "Essayons"

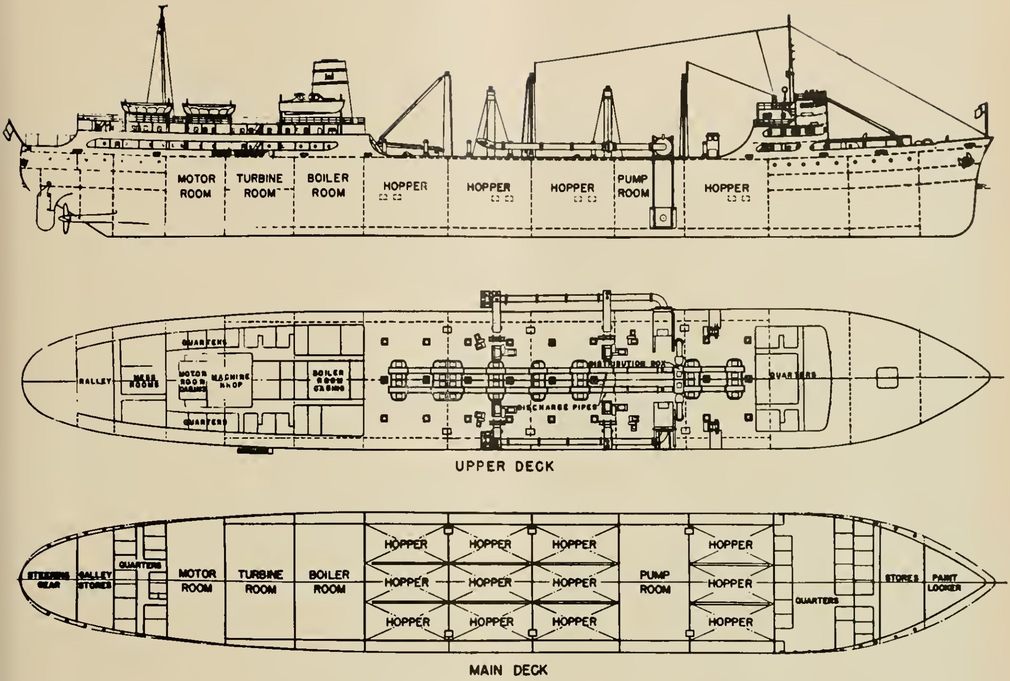
—World's Largest Hopper Dredge

THE world's largest seagoing hopper dredge, the Army Engineers $10,000,000 *Essayons,* launched on August 25, 1949, at the Sun Shipbuilding and Dry Dock Company yards in Chester, Pa. has been assigned for operation to New York harbor. She was completed and trials held during January.

This dredge features a trunnion connection in the suction pipes which permits them to be hoisted clear of the water, an "unwatering system" that removes water locked in the bins after dumping, a gas injection system that increases pumping efficiency, twin screws and twin rudders to increase maneuverability, and all types of safe navigation devices. The pilot house is forward, hopper space and pump room amidships, and the boilers, turbo-generators, and propulsion motors aft The hopper space is divided into four hoppers by transverse bulkheads. Each hopper is then sub-divided into three bins athwartship by longitudinal bulkheads, and each bin is fitted with two bin gates at the bottom of the vessel. The overall length of the *Essayons* is 525′ 2″. length between perpendiculars 500′, beam molded 72′, depth molded 40′ 5″, draft loaded 27′ 8″, displacement tonnage loaded 22,120, and hopper capacity 8,000 cubic yards. The power plant, capable of delivering 8,000 shaft horsepower, will propel the ship while dredging at a 3 m.p.h. rate against a 5 m.p.h. current. The estimated vessel speed, fully loaded, in shoal water is 15.5 m.p.h.

The main power plant is of the turbo-electric type equipped for automatic operation throughout. Steam is supplied by two Babcock & Wilcox sectional header marine water tube boilers, oil fired and designed for 600 pounds per square inch working pressure at 850 degrees Fahrenheit total temperature The boilers are equipped

The "Essayons" departing for sea trials, December 1949.



Layout and profile plan of "Essayons."

with superheaters, de-superheaters, tubular air heaters, automatic superheat control, automatic feedwater control, automatic soot blowers, and automatic combustion control. Each boiler has a normal evaporation rating of 60,000 pounds of steam per hour and an overload rating of 75,000 pounds per hour.

Power for normal operation of the ship is provided by two Westinghouse geared main turbine-generator sets each equipped with constant speed governor, overspeed trip and a trip which automatically closes the steam supply in the event of failure of the lubricating oil pressure. These turbines are conventional marine type operating normally at about 5,400 r.p.m. Each turbine drives, through a single reduction gear, three generators connected in tandem. The normal capacity of each turbine is sufficient to produce 4,000 horsepower propulsion on one shaft and develop 500 KW for auxiliary power. The generators driven by each turbine are for auxiliaries, pumping and propulsion.

The propulsion motors are Westinghouse, installed directly below the generators, and speed is obtained by variation of the propulsion generator voltage. Each motor is fitted with a tachometer generator which is connected to indicators located in the engine room and in the pilot house. Up to full speed in either direction, the propulsion speed can be controlled from the pilot house or from the engine room. After full speed has been reached, full power is maintained on each propeller by an automatic regulating unit.

Dredging is performed by two pumps located port and starboard in the pump room. These pumps are of the centrifugal side-suction dredge type, having 36″ diameter suction and 32″ diameter discharge. The casing and impeller are alloy cast steel. The head liners are alloy cast iron and the shoulder and throat liners are molded rubber with steel inserts. Each pump has a theoretical capacity of 63,450 gallons of water per minute at a speed of 180 r.p.m. The pumps discharge into a central distribution box located on the upper deck above the pump room.

The two 36″ suction lines are suspended along the outside of the ship, one port and one starboard. A rubber surfaced ball and socket type universal joint is installed in each pipe about 30 feet from the trunnion to provide flexibility. The draghead designed to maintain contact with the channel bottom and to act as an agitator and strainer for the material to be dredged, is installed on the lower end of the suction pipe. The suction pipe is supported at the ball joint and at the draghead by cables connected to motor-driven winches on deck. The

1. Two of these 3800-kw turbines furnish all propulsion, pumping, and auxiliary power for the "Essayons."

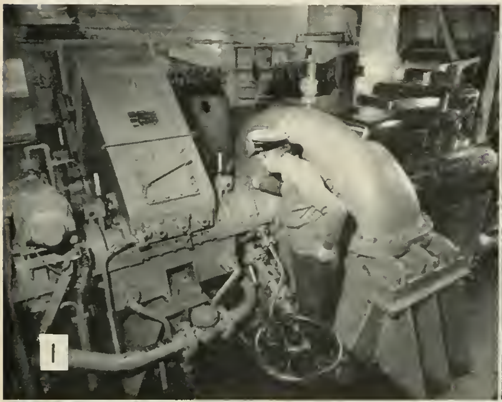
2. Each turbine drives propulsion, pump, and auxiliary generators connected in tandem.

3. Engine-room propulsion control board.

4. This Rototrol rotating control automatically maintains constant horsepower at any speed setting and prevents overload.

5. The dredge pump motors are rated at 1850 hp each. To the right is a draghoist m-g set.

6. The dragpipe can be seen along the ship's side in this view from the water.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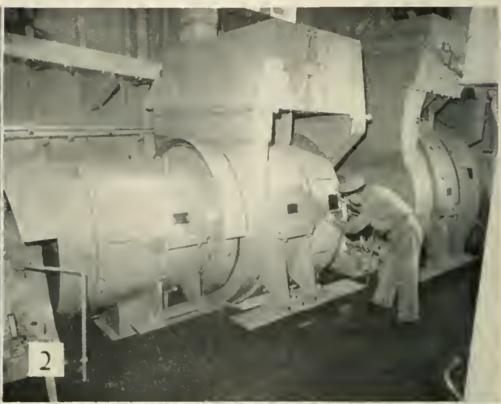
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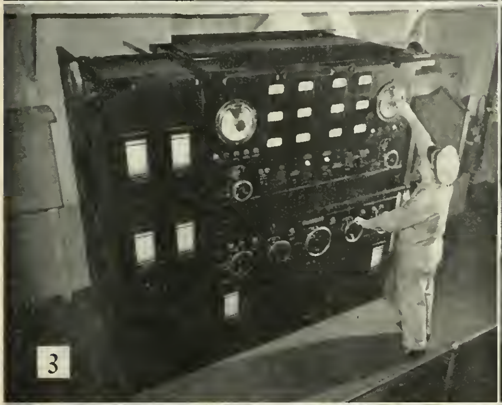
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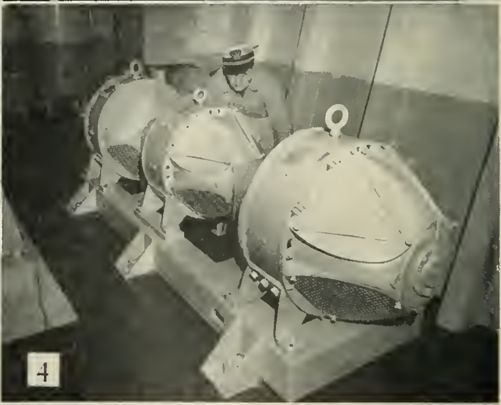
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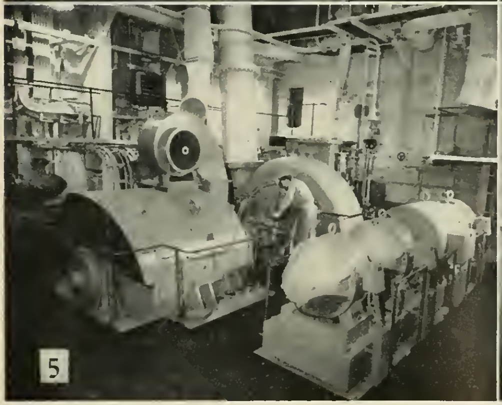
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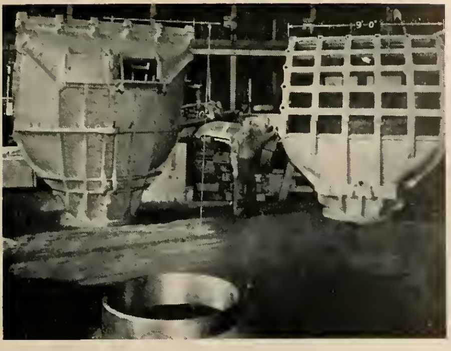


Trunnion connection for suction pipes of "Essayons."

depth to which the drag can be lowered is controlled by manipulation of the winches. Gauges are installed to indicate the dredging depth at all times. The suction head or drag can be lowered to a depth of 62 feet at an angle of about 45 degrees, which is the maximum dredging depth. The vessel is equipped with the largest adjustable type dragheads ever installed on a hopper dredge. This type of draghead was developed by F. C. Scheffauer, Consultant, formerly of the San Francisco District, Corps of Engineers, and is in general use on hopper dredges.

An unusual feature of this dredge is a sliding trunnion connection which permits the trunnion and drag pipe to be hoisted above the water when the vessel is not engaged in dredging. This feature removes a major appendage from each side of the hull, will result in increased vessel speed and provide for greater safety while navigating to and from the disposal area. In addition provision has been made to breast-in and stow in saddles on deck the entire drag pipe. when required for a sea voyage, docking or maintenance.

Another important feature is the gas ejection system developed by R. H. Hoffman of the New York District of the Army Engineers. In recent years a large increase in the amount of gases, principally marsh gas, contained

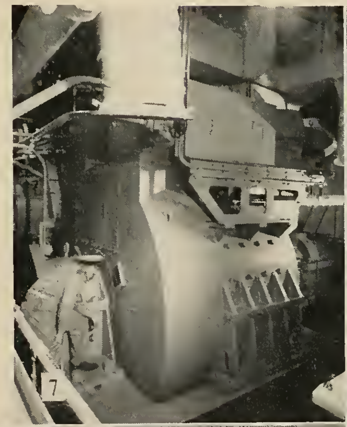
7. Each of the two-shp propulsion motors is connected solidly electrically to its respective generator.

8. Separate motor-driven winches are located at each station of the drag-pipe to avoid mechanical complications.

9. Control of all sections of the drag-pipe is by a single lever in the drag-tender's house.

10. View from dragtender's house along suction pipe.

11. One of the control pedestals in the wheelhouse can be seen in this view.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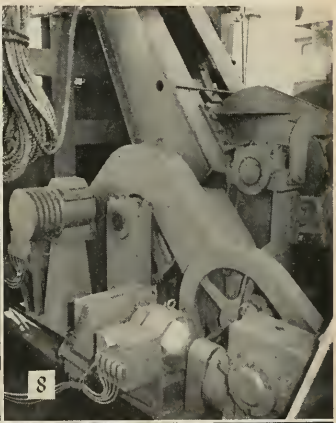
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LIST OF EQUIPMENT ON "ESSAYONS"

No. Units Per Ship	Name of Equipment	Name of Manufacturer	Size or Capacity	Type
2	Boilers	Babcock & Wilcox	Design Rated Capacity 60,000 BTU/Hr.	Water Tube
2	Main Turbines	Westinghouse	4000 S. H P.	
2	Reduction Gear	Westinghouse	5432/600 R P. M.	Double Helical Single Reduction
2	Propulsion Generator	Westinghouse	3300 K. W.	D. C.
2	Dredge Pump Generator	Westinghouse	1600 K. W.	D. C.
2	Auxiliary Generator	Westinghouse	500 K W.	D C.
2	Condenser	Westinghouse	5500 Sq. Ft.	
2	Main Air Ejector	Westinghouse	100 Sq. Ft. I & A. Condenser	2-O3 Ejectors
2	Propulsion Motor	Westinghouse	4000 H P.	D. C.
1	Main Switchboard	Westinghouse		
1	Propulsion Switchboard	Westinghouse		
2	Main Condenser Circulating Pump	Worthington	7850 G. P. M.	Motor Driven Vertical Centrif.
2	Electric Machinery Cooling Water Pump	Worthington	1000 G. P. M	3-LV-1 Motor Driven Vertical Centrif.
2	Main Condensate Pump	Worthington	85 G. P. M.	1½-UZS-3 Motor Dr. Vertical Centrif
1	Standby Condensate Pump	Worthington	85 G. P. M.	1½-UZS-3 Turb. Dr. Vertical Centrif.
2	Main Feed Pump	Worthington	110 G. P. M.	Variflow Single Acting Vert. Triplex
1	Standby Feed Pump	Worthington	175 G. P. M.	14" x 9" x 24" Vertical Simplex
1	Fuel Oil Transfer Pump	De Laval	250 G. P. M.	32N-#350 Vertical Rotary
1	Standby Fuel Oil Service Pump	Worthington	15 G. P. M	7" x 4" x 10" Vertical Simplex
2	Standby Lub. Oil Service Pump	Quimby	108 G. P M	3-C Rotary
2	Main L. O. Cooler Circ. Water Pump	Worthington	150 G. P. M.	Horiz. Centrif.
1	Cold Storage Plant Condenser Circ Pump	Worthington	25 G. P. M.	1DS-5 Monobloc
1	Aft Air Cooling Plant Condenser Circ. Pump	Worthington	200 G. P. M.	2½-R-1 Horiz. Centrif.
3	General Service Pump	Worthington	300 G. P. M.	3RVS-1
1	Fire Pump	Worthington	400 G. P. M.	3-UBS-1 Vert. Centrif.
1	Standby Pire Pump	Worthington	400 G. P. M.	9½" x 11" x 18" Vertical Simplex
2	Sanitary Pump	Worthington	75 G. P. M	1½ R-1 Volute
2	Fresh Water Pump	Worthington	50 G. P. M.	1½ DES Self-Priming Monobloc
1	Contaminated Evaporator Feed Pump	Worthington	20 G. P M.	3" x 2¾" x 3" Horiz. Duplex
1	Salt Water Evaporator Feed Pump	Worthington	30 G. P. M.	4½" x 3¾" x 4" Horiz. Duplex
1	Make-up Evaporator Feed Pump	Worthington	20 G. P. M.	3" x 2¾" x 3" Horiz. Duplex
1	Distilled Water Transfer Pump	Worthington	12 G. P. M.	1-DS-5 Monobloc
1	Waste Brine Pump	Worthington	10 G. P. M.	1-DS-5 Monobloc
1	Hot Water Circulating Pump	Worthington	10 G. P. M.	1½-DXS-4 Monobloc
4	First Stage Heater Drain Pump	Worthington	10 G. P. M	1½-DDE Monobloc
1	Standby Forced Draft Fan	Westinghouse	30,300 C. R. M.-4½" S. P.	25 TD 18 Turbine Driven,
1	Ship's Service Air Compressor	Worthington	110 C. F. M.	6/6/5 x 5 3 Cyl.
1	Soot Blower Air Compressor	Worthington	110 C. F. M.	6/6/5 x 5 3 Cyl.
1	Remote Control Air Compressor	Worthington	40 C. P.M.	4⅞ x 2⅞ x 2¾
2	Cold Storage Plant Refrigerant Compressor	General Electric	28,000 BTU/Hr.	CM-83J
1	Air Cooling Plant Refrigerant Compressor	General Electric	47.2 Tons	CM-124J
1	Deaerator	Worthington	86,100 #/Hr.	Jet Type
4	Lub. Oil Coolers	Westinghouse	110 Sq. Ft.	
1	Cold Storage Plant Refrigerant Condenser	Condenser Service	27 Sq. Ft.	4-Pass
1	Aft Air Cooling Plant Refrigerant Condenser	Condenser Service	347 Sq. Ft.	4-Pass
1	Lub. Oil Storage Tank	S. S. & D. D. Co.	750 Gals.	
2	Lube Oil Sump Tank	S. S. & D. D. Co.	500 Gals.	
2	Lub. Oil Sludge Tank	S. S. & D. D. Co.	100 Gal.	
1	Lub. Oil Daily Service Tank	S. S. & D. D. Co.	6 Gal. Each Compartment	3 Compartment
2	Diesel Oil Storage Tanks	S S. & D. D. Co.	2000 Gal.	
2	Diesel Oil Service Tanks	S. S. & D. D. Co.	150 Gal.	
2	First Stage Heater Drain Tanks	S. S. & D. D. Co.	70 Gal.	
2	Atmospheric Drain Tanks	S. S. & D. D. Co.	40 Gal.	
1	Contaminated Drain Tank	S. S. & D. D. Co.	50 Gal.	
1	Potable Water Pressure Taok	S. S. & D. D. Co.	220 Gal.	
1	Sanitary Water Pressure Tank	S. S. & D. D. Co.	220 Gal.	
1	Ship's Service Compressed Air Receiver	S. S. & D. D. Co.	25 Cu. Ft.	
1	Soot Blower Compressed Air Receiver	S. S & D. D. Co.	90 Cu. Ft.	
1	Remote Control Compressed Air Receiver	S. S & D. D. Co.	10 Cu. Ft.	
1	Hydraulic Door Accumulator Tank	Continental Equipt. Co.	250 Gal.	
2	Lub. Oil Purifier	Sharples	250 G. P. H	14 VPHA
1	Oil & Water Separator	Bethlehem	10 Tons/Hr.	Model #4-5
1	Rototrol M. G. Set	Westinghouse	1-30 H. P. Motor 2-10 K W. Generator	
2	Turbine Room Gauge Board	S. S. & D. D. Co.		
1	Boiler Room Gauge Board	Bailey		
4	Pedestal Bearing	S. S. & D. D. Co.	14¾" Dia.	Self Aligning
2	Thrust Shaft	S. S. & D. D. Co.	15½" Dia.	
2	Tail Shaft	S. S. & D. D. Co.	16½" Dia.	
4	Line Shaft	S. S. & D. D. Co.	14½" Dia.	
2	Boiler Compound Feeding Tanks	S. S. & D. D. Co.	9 Qts.	
1	Cathodic Protection Generator	Westinghouse	20 H. P. Motor 10 K. W. Generator	
1	Salt Water Evaporator Feed Pump	Worthington	69 G. P. M.	1½ R-1 Volute

"Essayons" on sea trials.

in the bottom material in many areas has detracted seriously from the efficiency of dredging operations. At the river bottom, this gas is retained under pressure in the material. However, the dredging process releases the gas, and when the gas enters the pump in greatly increased volume, the pump "loses suction." A number of experiments with ejectors of several types have been conducted and the most effective has been installed on the *Essayons*. It consists of a liquid piston vacuum pump capable of 1290 c.f.m. at 20″ vacuum whose suction end is connected to the dredge suction pipe at a point near the dredge pump. The suction pipe casting at this point is a separation chamber. The extraction point for the vacuum pump is at the top of this chamber. The released gas is then drawn off by the vacuum pump and discharged to the atmosphere.

An unwatering system is installed to remove water remaining in the bins when the gates are closed after dumping has been completed. Thus, when dredging is resumed, dilution of the dredged material being pumped into the bins is avoided, and a greater percentage of solid material in the bins is obtained. The "unwatering system" consists principally of a 7000 g.p.m. centrifugal pump driven by a 125 h.p. motor located in the dredge pump space, 10″ suction pipe branches connected to each bin, and air-operated main and selector valves in all main, branch, and backwash piping.

The electrical equipment features three generators on the port side and three identical generators on the starboard side, each set mounted in tandem and geared to the main turbine on that side of the ship. All generators are D.C. and each set contains a dredge pump, propulsion, and auxiliary generator. The propulsion generators deliver 3300 kilowatts each and are shunt wound for 600 to 720 volts. Potentials of this order are used to keep the generators and motors of large capacity within reasonable dimensions. Higher potentials have been avoided because of possible dielectric difficulties in the humid atmospheres common to dredging practice. The dredge pump generators are each rated at 1600 kilowatts and are shunt wound for 600 volts. The auxiliary generators are each rated at 500 kilowatts and are "three-wire" machines shunt wound for 120 and 240 volts. Propulsion and dredge pump generators are inclosed in housings which contain a blower, cooling coils and air filters so that dust is removed from the circulating air and favorable temperature conditions are maintained during operation.

There are two shunt wound propulsion motors, each rated 4,000 horsepower at 92 to 110 r.p.m. and connected directly to a propeller shaft. The dredge pump

Dragheads which are assembled on ends of suction pipes of "Essayons" by Sun Shipbuilding.

motors are shunt wound and rated at 1850 horsepower each on application of 500 volts at a speed of 155 to 180 r.p.m.

Modern navigation devices include an electric draft indicator which shows at all times the fore and after draft of the ship; a recording precision depth finder which provides a permanent record of channel depths before and after dredging; a gyro-compass with repeater stations; a binnacle-type radio direction finder; and radar.

This dredge will require a crew of 133 officers and men to operate it seven days a week. A well-equipped laundry will be furnished for the convenience of the crew. Recreation rooms will be equipped with card tables, tennis tables, book and magazine racks and facilities for motion pictures and safety meetings. A well-stocked ship's store will be provided. For additional crew comfort, all quarters, dining and recreation spaces will be heated and ventilated in cold weather and cooled, dehumidified and ventilated in hot weather. During hot and humid summer days the temperature in all living spaces will be kept down to 80 degrees dry bulb at approximately 67 degrees wet bulb.

The *Essayons* was designed by the Marine Division of the Philadelphia Office of the Army Engineers under the direction of Colonel F. F. Frech, District Engineer and supervision of W. H. Roberts, Chief of the Marine Division. The keel was laid down on December 15, 1947 and construction was under the direction of R. L. Burke, Vice-President and General Manager of Sun Shipbuilding and Dry Dock Company.

Navy's Pacific Medical Survey

The USS *Whidby,* specially converted sea-going medical research laboratory, arrived at the Navy Yard, Pearl Harbor, January 24, after 11,381 miles of cruising in the islands of the Pacific Trust Territory. The ship is in for routine maintenance work before resuming her history-making medical survey of the peoples of the Marshalls, Carolines and Northern Marianas Islands.

The *Whidby* left Pearl Harbor in July 1948 to conduct an island-by-island examination of the health of the indigenous peoples in the Trust Territory. When completed, it will be the most comprehensive survey ever undertaken of any comparable group of people. Upon the statistical data gathered by technical members of the *Whidby's* crew will be based long-range plans for improvement of public health in the Territory.

To date, *Whidby* medical and dental men have examined 19,713 persons on 44 islands in the approximately 3,000,000 square miles of ocean area over which Trust Territory communities are distributed. Complete medical records of every person on the islands have been compiled for study by the staff of Admiral Arthur W. Radford, USN, High Commissioner of the Trust Territory islands of the Pacific.

The 177 foot Pacific Fleet auxiliary vessel carries a crew of 45 men and eight officers including two medical officers, a dentist and navy hospitalmen and laboratory technicians. The modern air conditioned sick-bay occupies the complete below deck spaces of the forward part of the ship. Twenty patients can be handled at a time and the procedure for all persons includes a complete examination, oral examination, chest X-ray and laboratory analysis.

The 706 ton, twin screw, diesel driven ship was specially fitted out through extensive alterations at the Pearl Harbor Naval Shipyard in 1948 to undertake her unique mission. The ship is equipped with rubber boats and an amphibious DUKW to enable crew members to get ashore over coral shoals that rim many of the islands the ship visits. The island people are brought aboard either in the Navy-manned boats or by native-manned out-rigger canoes for the examination. In cases of serious illness, medical personnel visit the patients in their homes.

Cooperation by the island people in the medical survey program is 100%. Occasionally an islander will follow suit when he sees no harm is done to others. The people are eager to overcome some of the long prevalent ills in the islands and have implicit faith in the Navy's medical program.

Following ship overhaul in the Pearl Harbor Navy Yard, the vessel will return to the Trust Territory islands to continue the survey of the 120 inhabited islands of the Territory. It is planned to repeat the investigatory trips annually for the next ten years to check the progress of medical activities and discover detailed information as to the health of the island peoples.

Reach the Red Cross Goal!

Approximately 228,000 victims of 330 disasters were helped by the American Red Cross last year. When disaster strikes in floods, fires, tornadoes and other catastrophes, the Red Cross provides immediate assistance in the form of shelter, food and medical care. Other victims are given aid in the long road to recovery. Funds are provided for rebuilding ruined homes and farms, for new furniture, and long-term medical care for those unable to help themselves toward complete recovery. Disaster relief and rehabilitation is one of the community programs for which the Red Cross asks your contribution towards the $67,000,000 goal in the annual March fund campaign.

Denny-Brown Ship Stabiliser

A SHIP STABILISER, developed in England prior to the war and used successfully by the British Admiralty in wartime naval operations, is now being made available to American shipping, according to an announcement by W. G. Schalscha, executive vice president of Lidgerwood Industries, Inc., New York. His firm has been appointed sole licensees and manufacturers in the United States of the anti-roll device known as the Denny-Brown Ship Stabiliser.

The stabiliser substantially reduces the rolling motion of a ship through the use of retractable fins which project from the side of the vessel amidships, well below the waterline. These hydrofoils, as they are known technically, are attached to shafts so that they can be automatically adjusted to counter the ship's rolling motion.

When the ship starts to roll, the electro-hydraulic power is supplied automatically by a small gyroscope. The effect of the fins in operation is similar to that of ailerons on an airplane. When not in use the fins are retracted into receptacles in the hull of the ship. The stabiliser is controlled from the bridge.

During the war, the British Admiralty used the Denny-Brown stabiliser for the purpose of aiding accurate gunnery at sea. Since the end of the war, details of the device have been made public, and it has been installed in privately-operated ships

The Denny-Brown Ship Stabiliser is now effectively aiding the comfort of passengers on eight cross-channel ships and on several ocean-going vessels. In addition, the British Admiralty has installed the Stabiliser in a total of 114 Naval ships.

The reduction of a ship's rolling motion through the use of this device averages about 75 per cent, and even in the difficult case of a heavy quartering sea causing yaw rolling, the reduction is about 60 per cent.

Bilge keels reduce rolling, but are not active and therefore are only effective when the ship has considerable roll. The reduction achieved by bilge keels is not comparable to the reduction obtained by the Denny-Brown Ship Stabiliser.

The Stabiliser

The Stabiliser consists of fins protruding on either side of the vessel about amidship and in the vicinity of the bilge. These fins are of special design to give maximum stabilising force per square foot of area. They are mounted in balance on stocks which may be rotated in opposite directions by electro-hydraulic machinery. This machinery comprises electric motor and variable delivery pumps supplying pressure fluid to pistons which are coupled to the finshafts. It is similar to a steering gear, but much quicker in action, being able to move the fins from full tilt one way to full tilt the other in less than one second.

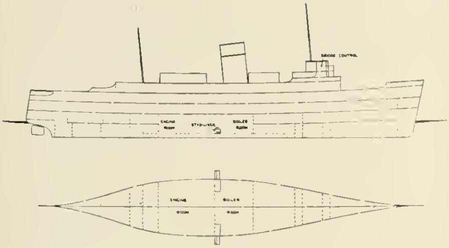
The high output per square foot of fin area is obtained by hinging the after part of the fin to the main part, and tilting this flap relative to the main part by a simple mechanism which works automatically when the main fin is tilted. The control of the fins is obtained basically from a small gyroscope mounted with its axis across the ship and free to precess within limits about a vertical axis. In essence this control interprets the angular velocity of the ship and applies a resisting couple through the fins to reduce the angular velocity, i.e. rolling velocity, of the ship below a certain low figure.

Size of Fins

This naturally depends on a number of factors but the most important are the displacement of the ship, the metacentric height (GM) of the ship, and average speed of the ship, and the beam of the ship at the point where the fins are fitted. The first two control the work to be done, whereas the second two control the output from the fins.

Fins have been designed from 20 ft^2 up to 100 ft^2 the former for a vessel of 2000 tons displacement and 16 knots speed, and the latter for 80,000 tons displacement and 30 knots speed. The outreach of the fins from the shell line is 1.5 to 2.0 times the width. For rough guidance a 3,000 tons displacement cross-channel type of

John Reid (right), sales manager of the Marine Division of Lidgerwood Industries, Inc. of New York, explains with this model the workings of the Denny-Brown Ship Stabiliser as W. G. Schalscha, executive vice president, looks on. The company has been appointed sole licensees and manufacturers in the U. S. of the British-developed anti-roll device.



Upper: This shows the position in which the stabiliser is mounted in the hull.

Lower: The stabiliser fins are indicated in extended positions.

20 knots speed would require one pair of 20 to 30 ft^2 fins. A 12,000 tons displacement intermediate liner type of 16 knots speed would require about 50 ft^2 fins, whereas a 25,000 tons displacement fast liner type of 22 knots speed would probably require smaller fins, but obviously more heavily loaded due to the higher speed.

Power Required

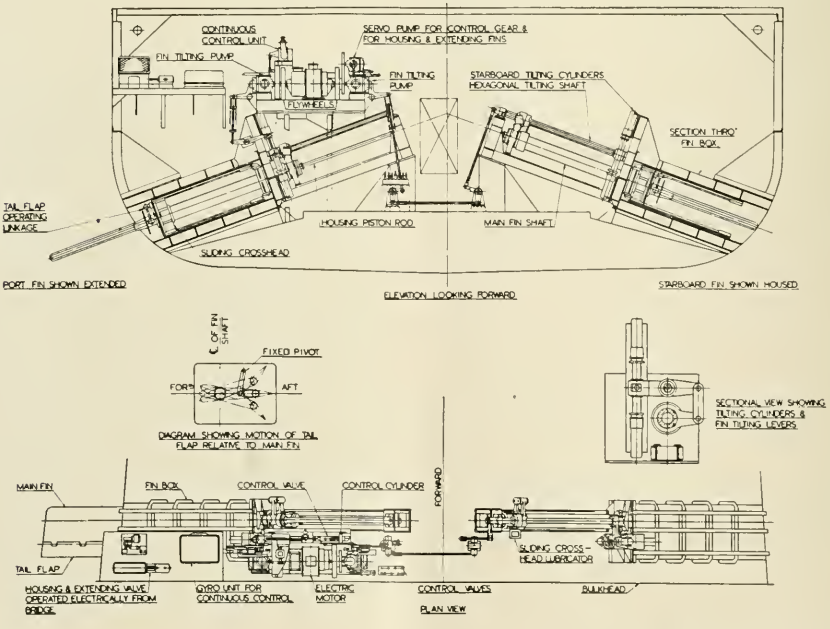
As the fins are mounted approximately in balance the main work to be done in tilting the fins is against friction in bearings caused by the heavy loading of the water forces on the fin surface. This friction is not excessive as all bearings are force lubricated. In the smallest sizes a 12 H.P. electric motor supplies all the power required for housing and tilting the fins. The cross-channel type referred to above requires about a 20 H.P. motor, the intermediate liner about a 30 H.P. motor and the fast liner about a 50 H.P. motor.

Effect on Speed

This is an important point and one that requires explanation. When a ship is rolling the power required to propel it at a given speed is substantially increased (up to 15% and beyond, depending on the extent of the rolling). Under these conditions, if the ship is stabilised this increase in power is no longer called for, and may be absorbed in the working resistance of the stabiliser fins without net increase in propulsive power. Actually, in favorable cases this is exactly what happens; the working resistance of the fins just balances the increase in resistance due to rolling. In less favorable cases there may be a net loss in speed.

It will be appreciated that when the fins are out but not operating the increase in resistance is negligible. The increases referred to above arise when the fins are tilted to resist the rolling tendency of the vessel in a seaway.

From the illustration here it will be seen that the top of the operating cylinder is about 6 ft. 6 in. above the bottom of the boxes. The controlling unit, comprising motor and pumps, can be conveniently accommodated above one of the boxes, while the few remaining items of control take up little space, and can be installed anywhere convenient adjacent to the main plant. The space above the other box may be utilized for any piece of auxiliary machinery that can conveniently be disposed in that position.


CONTINUOUS CONTROL UNIT
SERVO PUMP FOR CONTROL GEAR & FOR HOUSING & EXTENDING FINS
FIN TILTING PUMP
FIN TILTING PUMP
STARBOARD TILTING CYLINDERS
HEXAGONAL TILTING SHAFT
FLYWHEELS
SECTION THRO' FIN BOX
TAIL FLAP OPERATING LINKAGE
HOUSING PISTON ROD
MAIN FIN SHAFT
SLIDING CROSSHEAD
PORT FIN SHOWN EXTENDED
ELEVATION LOOKING FORWARD
STARBOARD FIN SHOWN HOUSED
℄ OF FIN SHAFT
FIXED PIVOT
FORD
AFT
DIAGRAM SHOWING MOTION OF TAIL FLAP RELATIVE TO MAIN FIN
SECTIONAL VIEW SHOWING TILTING CYLINDERS & FIN TILTING LEVERS
MAIN FIN
FIN BOX
CONTROL VALVE
CONTROL CYLINDER
FORWARD
TAIL FLAP
SLIDING CROSS-HEAD LUBRICATOR
HOUSING & EXTENDING VALVE OPERATED ELECTRICALLY FROM BRIDGE
GYRO UNIT FOR CONTINUOUS CONTROL
ELECTRIC MOTOR
CONTROL VALVES
BULKHEAD
PLAN VIEW

Weight of the Stabiliser

The total weight (including loss of buoyancy) is small, amounting to about 1% of the displacement in cross-channel types and less than ½% of the displacement in large vessels.

Where Accommodated

The gear is preferably fitted in the engine room, boiler room or auxiliary engine room. It may be fitted flat across the inner bottom, or each fin may be tilted to give a more efficient line of action. The main parts are the fin and fin boxes, the withdrawal gear and tilting gear, the electric motor and variable delivery pumps mounted as a unit and the gyro control gear. This can generally be accommodated in a fore and aft length amounting to about two frame spaces.

How it is Handled

The whole installation is under the control of the officer on the bridge in the manner described below. The sequence of the operation is as follows:

1. The Captain, on deciding to put the Stabiliser into operation, presses a button, which sounds a gong near the gear and illuminates a panel reading "Start Stabiliser." The Engineer then starts the motor driving the pumps and starts the gyroscope. As soon as full revolutions are reached, the engineer presses a button, which illuminates a panel in the bridge box reading "Stabiliser Ready."
2. The Captain then closes a switch, which causes the fins to protrude. About thirty seconds thereafter a panel in the box will light up, reading "Fins Out."
3. The Captain then closes a second switch. The stabiliser comes under the control of the gyroscope, begins to operate, and thereafter carries on automatically.

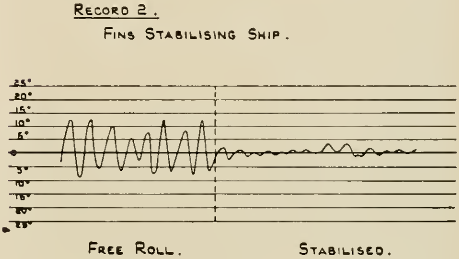
When it is desired to cease operating, the series of operations described in 2 and 3 above is reversed, when the fins are retracted and the "Fins Out" panel goes dark. Finally, a "Stop Stabiliser" button is pressed. The gong sounds down below, the "Start Stabiliser" panel goes dark, and the "Stop Stabiliser" panel lights up. The engineer then opens the switches to the motor and the gyroscope, when the "Stop Stabiliser" panel goes dark.

Objections to the Stabiliser

Sometimes a fear is expressed that owing to maladjustment or damage to the gear or control, it may in service on some occasion operate so as to increase instead of to reduce rolling. Experience of a large number of vessels has shown there is no ground for such apprehension. The worst that might happen is that the fins might jam one fully up and the other fully down. In this condition they may be housed either by power or hand gear, but even with the fins out and fully tilted they would give the vessel a static list of 4° or so, which would be merely inconvenient.

On any assumption, it is impossible that the Stabiliser should endanger the ship. It is comprehensible that some nervousness should be felt either of a system where very large gyroscopes dispose of immense stored energy or of a system where masses of loose water are under more or less effective control. Both these features are absent from the Denny-Brown Stabiliser.

The argument is sometimes advanced that a stabilised ship will be subjected to greater stresses than an unstabilised ship. The reverse is the case, for two reasons. In the first place, racking stresses, which arise from angular acceleration of the vessel in rolling, are often unpleasantly evident—especially in passenger vessels with tiers of erections—by reason of creaking noises, which are unavoidable even with the best of joiner work. These, obviously, will not be in evidence in a stabilized ship. In the second place, it is well known that in certain sea conditions the ship may roll against the sea, and it is in these conditions that the waves are noted as striking the ship. In this respect, also, the stabilised ship will have an advantage Reports are on record of stabilised ships being comparatively dry and able to maintain speed when other unstabilised vessels proceeding with them have had to reduce speed considerably. It is also on record that the use of the Stabiliser reduces yawing and helps to retain control, especially in following-sea conditions.



The manufacturer of the stabiliser has reported the results of various tests at sea, one of which appears above. It is a record of stabilising in a fairly regular moderate beam sea, and, as can be seen, the rolling is eliminated for all practical purposes.

General

The gear is quiet in operation and may be worked continuously. The fins are supplied complete with fin boxes and arrangements must be made with the shipbuilder to build these boxes into the hull with adequate stiffening to transmit the loads into the hull

The lubrication of the gear is automatic when the fins are in use. When not in use the fins should be extended and housed once daily as a routine drill.

A hand pump is provided for housing the fins in emergency if the main power is not available.

No additional personnel are necessary as operation of the gear is automatic after bridge puts control in operation. Ordinary maintenance of gear is the only demand on time.

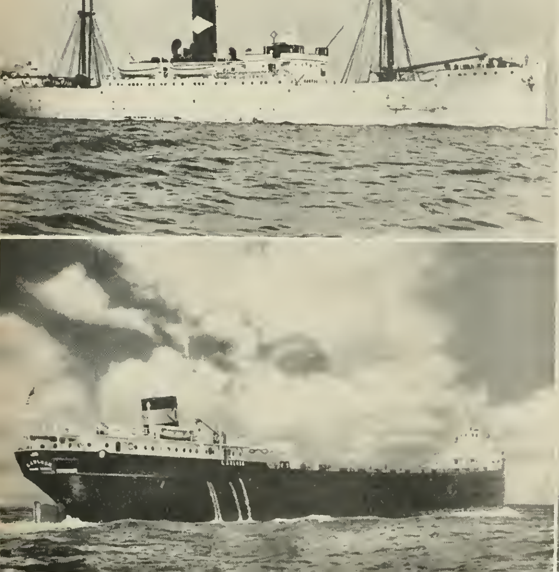
Weight

The estimated weight for a ship of the type proposed for Pacific Coast Steamship Co. with displacement of approx. 14,568 Tons, 530′ long, 90′ beam (deck) and 22′ 3″ draft—with estimated service speed of 25 knots

(Please turn to page 117)

ELECTRIC FERRIES

CHINOOK



General Motors' Great Advance In Diesel Installations

IN an interview with George W. Codrington, Vice President of General Motors and General Manager of the Cleveland Diesel Engine Division of that Corporation, he elaborated on the major maritime development in which diesel-electric drive is supplanting steam for the propulsion of vessels of many types, and he furnished a set of pictures of vessels in which General Motors diesels have been installed. He said that today's trend from steam to diesel-electric is just as pronounced as was the change-over from sail to steam 100 or more years ago, and the diesel-electric drive is proving just as popular and economically advantageous in the marine field as it has for railroad passenger streamliners and freight locomotives. To date, General Motors has furnished diesel-electric propulsion for 717 vessels of 22 different

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CAPTIONS FOR PAGE 64

LEFT, TOP TO BOTTOM:

Diesel-electric tugs of the Moran Towing & Transportation Company dock the "Queen Mary" and other transatlantic liners.

Diesel-electric ferry boats are a common sight in New York Harbor.

The "La Playa," cargo vessel of United Fruit Company, is an outstanding example of repowering with GM Diesel-electric drive.

Diesel-electric propulsion in the "E. J. Block," an ore and coal carrier of Inland Steel Company.

RIGHT, TOP TO BOTTOM:

At the top is a picture of the "Wilkes-Barre," powered with GM Diesel-electric drive, recently added to the Lehigh Valley Railroad fleet.

Most U. S. submarines are powered with General Motors Diesel-electric drive in work demanding instantaneous split-second control, the highest degree of dependability, and the greatest maneuverability.

The "Chinook," finest and most modern automobile and passenger ferry in the United States, in service between Seattle, Washington, and Victoria, B. C., is propelled by GM Diesel-electric drive.

Largest GM Diesel-electric ship is the "Fulton," one of several similar United States submarine mother ships. These are 16,000-ton vessels, each boasting 11,200 shaft horsepower. They are 529 ft. 6 inches overall with complete machine repair shops and parts depots.

▶

Top: Diesel-electric drive propels and operates the pumps of the New York City fireboat "Fire Fighter," most powerful in the world.

Bottom: Many destroyer escorts were powered with General Motors Diesel-electric drive. These vessels are 300 feet overall.

classifications, nearly 100 of which vessels are employed in and about New York Harbor. General Motors is a strong factor in the field of diesel-electric propulsion.

With diesel-electric drive, the diesel engines operate generators which in turn make electricity to run the driving motors which operate the propellers, and furnish current for lights, pumps and winches. This affords the pilot instantaneous pushbutton control of the vessel's power from the pilothouse and bridge.

"A rapid upsurge in the use of the diesel-electric drive," Mr. Codrington said, "came during World War II when the United States Navy adopted it for many classes of war vessels because of its great dependability, easy maneuverability and rapid response to controls.

"Because of its outstanding success in war service, commercial marine boat builders, owners and operators were quick to recognize the many operating and economic advantages of this new form of propulsion.

"Already," reported Mr. Codrington, "the Moran Towing & Transportation Company of New York, the world's largest operator of tugboats, has nearly 30 of our diesel-electric tugboats and within the near future, probably during 1950, their entire fleet will be diesel-electric, the first completely diesel-electric fleet in the world."

Among the 22 classes of vessels now having General Motors diesel-electric drive are tugboats, ferries. lighters, dredges, tankers, yachts, cargo ships, fire boats, barges, sandsuckers, lightships, ice breakers, submarines, submarine tenders, mine-sweepers, net tenders, destroyer escorts, landing craft, rescue vessels, mine planters, store ships and survey boats. Commercial users of diesel-electric vessels in New York Harbor alone include the Lehigh Valley Railroad, Erie Railroad, Pennsylvania Railroad, Electric Ferries Company, Moran Towing & Transportation Company, Coral Sea Company, Great Lakes Dredge & Dock Company, Long Island Railroad, Card Towing Company, Mystic Steamship Company and the McWilliams Blue Line.

"Commercial vessels, like Navy ships," Mr. Codrington stated, "are used in the hardest and most gruelling service, and diesel-electric propulsion has been the answer to many problems. For instance, most of the big ocean liners—including the world's largest ships, the *Queen Elizabeth* and the *Queen Mary*—are now docked and sailed with the aid of diesel-electric tugboats. Such operations necessitate the same kind of perfect timing and instantaneous response to controls as is required by submarines and other war ships, where many lives or a battle may depend upon split-second operating. In commercial work, lives and property are at stake, and operating costs are another prime factor. Our diesel-electric drive is used on ships ranging from tugboats to huge submarine tenders of more than 16,000 tons, in coastwise service, the Great Lakes, the Pacific and Gulf coasts and in world-wide towing service, and everywhere it has been piling up amazing records for the economical and dependable handling of record tonnages."

The Captain —and Shipboard Morale

(Continued from January issue)

By F. J. LLANSO

Part Two—Starting a Voyage—Program for Good Morale

AS SOON AS possible after the ship commences her voyage, hold the following meetings in the master's office:

(a) Heads of departments.

(b) All officers. (All departments.)

(c) Heads of departments together with representatives from unlicensed personnel.

When heads of departments are met, the following points should be brought out:

1—Heads of departments are expected to run their departments with a minimum of detailed aid from the master. They are given full authority and are assessed full responsibility in this respect. They are, however, to report in full detail on the operation of their departments. If unable to see their way clearly and conclusively through any problem, they are to consult the captain. Failure to do so will assign full responsibility for any miscarriage in their administrations, upon themselves.

2—Heads of departments are to bring to the attention of the captain any and all instances of discord in personnel matters *and to bring them up when they first occur. It is of paramount importance that no time be allowed to elapse between their first knowledge of something wrong regarding morale and the time it is brought to the captain's attention.*

3—Heads of departments are directed to understudy the captain's methods in the handling of personnel and are further directed to carry out these methods to the best of their ability, in private and more particularly in public. They are warned that whole-hearted cooperation with each other in the efficient operation of the ship is a must; that if they have any differences among themselves it will be far better for the entire ship if they bring these up to the captain for consideration and

(Please turn to page 71)

Liverpool Harbor's Supervision Radar Station

EDITOR'S NOTE: In the October 1948 issue of the *Pacific Marine Review* there appeared an illustrated article on the radar installation for harbor supervision at Liverpool, England. The report that follows, after a year of service, has significant interest.

THE FIRST YEAR of operation, from July 1948 to July 1949, demonstrated that the Harbor Supervision Radar station, designed and installed by Sperry, has been a valuable addition to the facilities of the Port of Liverpool. During this period the installation has operated for a total of 3,782 hours, of which 1,283 hours were during periods of low visibility, and 213 vessels of a gross tonnage of 1,334,328 have made use of Radar assistance when entering or leaving the port.

The navigational assistance rendered to vessels during fog falls conveniently into two categories:

Radar Navigational Aid (Navi-aid), where the vessel, on request, is supplied with continuous information as to her own position in the approaches to the port, the channels, and the river, in addition to warning her of other vessels in the vicinity. An analysis of utilization under this category reveals the following facts:

Foreign-going merchant vessels assisted, 38 of 223,366 gross tons;

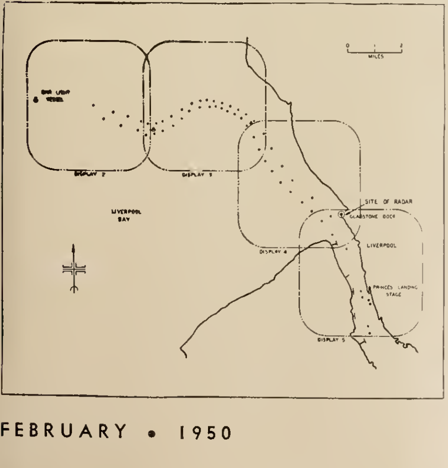
Home trade merchant vessels assisted, 13 of 32,305 gross tons, giving a total of 51 vessels of 255,671 gross tons.

Radar Navigational Advice (Navi-advice) covers cases where the vessel requests information as to other vessels stationary or under-way in the channels or in the river; advice as to areas where she can expect to find a clear anchorage; the positions of other vessels anchored in the vicinity; and the checking of her position after anchoring. This service has been used on several occasions by pilots preparing to leave the board's docks to a river anchorage, as well as by inward-bound vessels. Analysis of utilization shows that 143 foreign-going merchant vessels of 1,025,474 gross tonnage, and 19 home trade merchant vessels of 53,100 gross tons were assisted, making a total of 162 vessels of 1,078,574 gross tonnage.

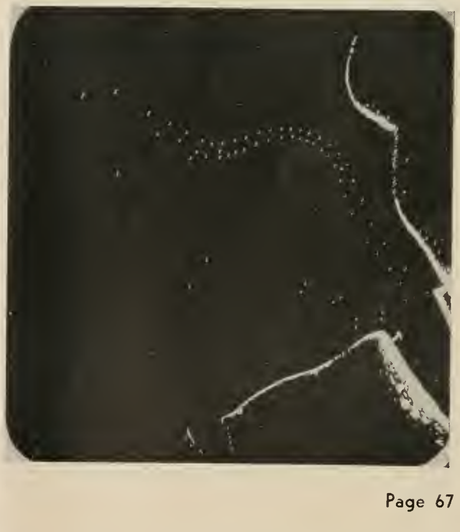
In addition, a number of exercises have been carried out in clear weather by both naval and merchant vessels to enable pilots to obtain an appreciation of the navigational assistance which can be provided. Advantage has also been taken of the services during fog by three naval vessels, the largest of which was H.M.S. *Eagle,* and eleven of the board's own craft, tonnages of which are not included in the analyses above.

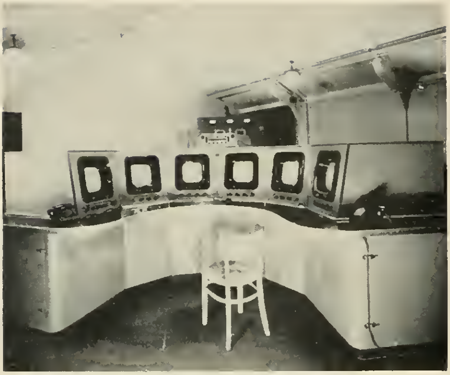
Additional Services. In addition to navigational assistance to individual vessels the radar station has provided other services. On 441 occasions, hoppers dumping spoil on the deposit site have been monitored; at the outset, a number of hoppers were observed to be dumping outside the appointed limits, but in the last four months no case of incorrect dumping was observed. The radar fixing of floating seamarks has provided a

Schematic of Liverpool Bay showing markers on circuitous channel leading from outer harbor into the Mersey River. Squares indicate four separate areas which are presented on four of the six radar scopes.



Drawing indicating how the general scope display will indicate channel markers leading from the outer harbor 14 miles from the radar scanner at Gladstone Dock.





Radar display console, Gladstone Dock. One scope presents general view of entire harbor and approaches; four scan sectional areas; sixth scope is wandering display for use in scanning any specific area.

valuable subsidiary service, particularly in thick weather, or when a vessel fouls a buoy and drags it out of position, which has occurred on several occasions.

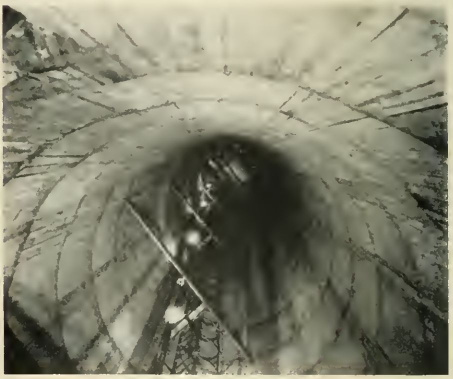
Fortunately, the number of occasions when radar assistance was required in fixing positions of grounded vessels have been few, but in one incident, a vessel was reported grounded and in distress, although nothing could be observed in the reported area on the radar screen. The Coastguard, however, decided to launch the Hoylake Lifeboat, and her progress and search of the area was observed by radar and reported periodically to the Coastguard.

Another valuable contribution is the four-hourly situation report which is prepared, giving the positions of all vessels at anchor and underway in the approaches, sea channels and river. This is broadcast on the wavelength of the pilots' "walkie talkie" sets, with the addition of weather and visibility reports for the area and details of any navigational warnings which may be in force. It has not been possible to obtain statistics of the number of vessels making use of this information as they do not communicate with the station, but pilots have reported that this service is of considerable assistance.

Closeup of radar tower at Gladstone Dock.

Equipment Performance

During the first five months of operation a number of modifications to the equipment were carried out by Sperry engineers to improve the performance and/or life of certain components. The success of this eradication of inevitable teething troubles is reflected in the progressively improving serviceability figures. The installation was non-operable, due to major radar faults, for 51 hours 15 minutes against 1,389 hours run for the first four months August-November 1948, while during the last four-month period of the year, April to July 1949, non-operation due to these faults totalled only 1 hour 23 minutes against a total running time of 1,199 hours 22 minutes. The respective percentages inoperative are 3.6% and .1025%, while over the whole of the period the equipment has been non-operable due to major failures for 57 hours 23 minutes, or 1.5% of the total period in operation As 51¼ hours of this time was concentrated into the first four months of operation, the corrective measures taken by Sperry after the initial working-up period have proved remarkably effective, and brought the equipment to a high standard of reliability.



Interior view from base of tower at Gladstone Dock

A stand-by generator has now been installed for use when mains failures occur, so that periods of non-operation have been reduced to a minimum. It is interesting to note that the longest continuous running time without a rest period was 41 hours 10 minutes, a truly creditable performance.

Now Indispensable

By its nature, an installation of the size and complexity required for the Port of Liverpool could not be fully tested until it had been subjected to a sustained period of operation in service. The Harbor Supervision Radar Station has passed through this testing time, and has emerged as a reliable unit fully competent to deal with the conditions arising in the Port of Liverpool, and can now be regarded as a virtually indispensable contribution to navigational facilities in that area.

Communication Services

The communication services are complementary to the radar service in disseminating information, but they also have distinct functions in helping to provide the comprehensive facilities required for full harbor supervision. These services embrace several duties, the most important of which is the operational communications traffic by "walkie-talkie" to assist the pilots of vessels, exclusive of radar information, in providing berthing instructions, docking and port health authority arrangements for individual ships, weather reports and area forecasts, confirmation of tug arrangements, and expected time of arrival to dockmasters. A total of 1,652 vessels of 9,302,394 gross tons made use of these services; in some cases where berths were not immediately available, as many as eight messages were required in respect of one vessel.

View of harbor supervision radar tower taken from Mersey River. Tower is 80 feet, with a scanner and drive mechanism on top 15 feet wide and weighing two tons.

In addition, the service provides operational communications between the board's tenders and the lightvessels, landline communications with the lighthouses for reporting vessels, etc., and services in connection with the dissemination of navigational warnings.

View up Mersey River, Liverpool, from radar tower at Gladstone Dock. Radar can "watch" ships dock and undock in river.

The Old Liverpool Telegraph Office was adapted for all this work, and, although the terms of the General Post Office License limits messages to those directly concerned with the board's business, the number of messages handled is considerable. Weather reports and forecasts are responsible for over 7,000 messages received, and about 3,000 such reports forwarded by telephone or teleprinter. During the twelve months 210 warnings to shipping have been transmitted, concerning navigational dangers, such as buoys out of position, or shoal soundings.

New communications equipment should be in operation early this year. The present system has used a single channel and it has frequently been choked by the volume it has been called upon to carry. With the new equipment two channels of communication will be available simultaneously at the Port Radar Station, bringing all units comprising the complete Harbor Supervision systems up to the same high standard of reliability and efficiency.

Ore Ship to Operate Out of Liberia is Model-Tested in Stevens Towing Tank

The Experimental Towing Tank of Stevens Institute of Technology has completed tests on the model of a 550-foot steamship for the States Marine Corporation which plans to build vessels to remove iron ore from the Port of Monrovia, Liberia.

Tests were run to determine into what depth a ship could operate out of the port into a ground swell existing at that location a good part of the time. The harbor has a nominal depth of 32 feet running to 34 feet for some distance beyond the breakwater. Prevailing swells are from the southwest and consist of waves 400 feet long and eight feet high.

The problem of the Experimental Towing Tank was to find out if a ship loaded to a draft of 28 feet would strike bottom when encountering a ground swell. During the tests measurement was made of the sinkage of bow and stern in various sized waves.

"Wilfred Sykes"

— Combustion Engineering Boilers and Westinghouse Turbines Drive Largest Great Lakes Ore Carrier

THE largest ore carrier ever built on the Great Lakes, the S.S. *Wilfred Sykes*, has just successfully completed official trials on Lake Erie. Built for the Inland Steel Company at the Lorain, Ohio, Yards of the American Ship Building Company, the *Wilfred Sykes* was launched on June 28, 1949. She is 678 feet overall and has a 70-foot beam and a bulk cargo capacity of 20,000 long tons. Her rated speed is 16½ miles per hour. On her trials she made 360 degree turns at 17.4 miles an hour, zig-zagged, backed and filled to the expectation of her designers and engineers.

At the completion of the run the *Wilfred Sykes* was put into dry dock for adjustments and inspection. She will make her first run to the head of the lakes next April.

Westinghouse Turbines, California-built

Her 7,000 HP Westinghouse turbines, built at Sunnyvale, California, pushed the *Sykes*, which has a rakish stem and cruiser stern, 1.4 miles faster than designers had anticipated. This speed will enable her to make the trip one way from Indiana Harbor, Ind., to Duluth in five days. Present vessels take 5½ to 6 days to make the trip.

Big Cargo Holds

The hatches are 50 feet long and 17 feet wide. The distance from the top to the bottom is 33 feet. An ordinary sized house could be placed in one of her cargo holds and there would be room enough for a garage and garden.

Although the *Sykes* is designed to carry 28,000 tons of ore, the channels connecting the Great Lakes are only 22 feet deep, so until the Government deepens them she will be able to carry only 20,000 tons.

The vessel is so large there are only three docks on the Great Lakes that can unload her—Conneaut, Cleveland and Indiana Harbor.

More Trips Possible

Her speed will enable her to make 44 round trips a year between Indiana Harbor and Duluth—her normal run. Present vessels make about 34 trips.

Thus in a year she will carry approximately 900,000 tons of ore from the Minnesota iron ranges. The freight rate from Duluth to lower lake ports is $1.25 a ton.

Combustion Engineering Boilers

Steam is generated by two Combustion Engineering

S.S. "Wilfred Sykes"

Type V2M marine boilers having a normal capacity of 32,000 lb. of steam per hour and an overload rating of 48,000 lb. per hour. In point of capacity these boilers are the largest yet applied to a cargo vessel in regular service on the Great Lakes.

Design pressure is 525 psig, operation being set at 450 psig. and 750 F. at the superheater outlet. Each steam drum is equipped with a surface-type desuperheater which is capable of desuperheating 8000 lb. of steam per hour to 50 deg. F. superheat.

Among the features incorporated in these modern boilers are the following:

1. Extended screen tubes, with separate inlet header, to provide protection for water drum without the necessity of refractory protection on the gas side of the drum.

2. Vertical superheater elements, which permit thorough cleaning by conventional soot blowers and provide less opportunity for deposit of products of combustion.

3. Flexible connections to and from superheater headers.

Firing of the boilers is by means of three steam atomizing oil burners designed to burn No. 6 fuel oil. The sides, roof and rear of the furnace are water cooled, with an inclined tube bank. Each boiler has a two-pass horizontal tubular air heater. The front and rear of the boilers are double cased, with the wind box at the front and air space at the rear. Air is furnished by motor-driven forced-draft blowers.

Steam conditions for each boiler are as follows:

Steam, lb/hr.—normal	32,000
Steam, lb/hr.—overload	48,000
Steam pressure, design, psig	525
Steam pressure, operating, superheater outlet, psig	450
Steam temperature, superheater outlet, deg. F.	750
Feedwater temperature, deg. F.	350
Air temperature to air heater, deg. F.	100
Air temperature to burner inlet, deg. F.	350

The pilot house of the *Sykes* is as large as the ordinary living room and has radar, radio compass, automatic steering gear and other modern navigational aids. A public address system from the pilot house reaches all parts of the vessel.

Owners' quarters on the ship are as complete as the finest hotel suite. The rear of the guest lounge is entirely glass-enclosed, facing the stern of the vessel. There are four staterooms, each with private bath. Each of the nine officers has his own room with private bath. The 27 crew members bunk two in a room with bath.

There also is a large recreational room and a laundry with automatic washer and an ironer.

The Captain —and Shipboard Morale

(Continued from page 66)

settlement than if they keep them under their hats and harbor grudges.

4—Heads of departments are encouraged to emulate the captain in their handling of officers junior to them and of crew under their direction. Under no circumstances are they to allow themselves the weakness of ridiculing the captain's methods for surely, if they do, it will eventually become known to the captain—to their disadvantage. Rather than that, they are to show the strength of carrying out their captain's policies to the letter—to their eventual, if not immediate, advantage.

5—Heads of departments are to write out, submit to the captain for approval and eventually publish, a comprehensive set of rules and instructions for all officers junior to them within their respective departments. This is to be done as soon as possible and it is their duty to see these rules carried out without fail.

6—Heads of departments are assured private cooperation and advice on all matters from the captain. They must never feel reluctance, for fear of being considered unqualified or inept, to bring any puzzle to the captain and they are assured of his sympathetic aid and impartial and impersonal investigation of any problem submitted, that involves their department or another department. If the last occurs, the head of department desiring clarification or ruling is to inform the other head of department involved *before* bringing the problem to the attention of the master. *There is to be no back-biting nor "under-cutting" of one head by another to the master . . . the captain will not tolerate such conduct, believing each head to be as important to the ship as any other head.*

When all officers are met, the following procedure is recommended:

1—Welcome them all and shake the hand of every officer who has not been previously met. (It is a good idea to have the heads of departments introduce their officers to the captain.)

2—Put it bluntly that the captain holds no one officer in higher regard than any other; that he considers them all as important in their respective positions as any among them; that he has no preference of one department over another; that any exchange of confidence between himself and the officers will be entirely according to rank and position within any given department, rather than to personal regard.

3—Acquaint the officers with the captain's impartiality by informing them of their equal off-duty privileges. Inform them of the intent and purpose of the mixed seating in the messroom.

4—Direct all officers to follow all orders from heads of department as if they emanated directly from the captain. Order them to follow the rules and instructions published to them by their heads. Give them the right to complain to the captain against what they consider wrongful treatment by their heads but make it plain that they must first take up the matter with the head of department to see if it can't be straightended out that way—if not, then they are to request joint audience with the captain and the head of department.

5—Assure all officers that the captain would rather speak well of them than not—that the rest is up to them.

6—Put all officers on the right path regarding treatment of crew in their control and regarding association with passengers.

7—Admonish all officers that if they ever take an act of correction from their captain as a move prompted by

(Please turn to page 110)

Commissioners Fleming Visit Pacific

At San Francisco's Propeller Club

LEFT, TOP TO BOTTOM:

Lloyd Fleming, Pacific Coast Manager, Maritime Commission; Mayor Elmer Robinson; E. H. Harms, President of Propeller Club; General Philip Fleming telling his corkscrew joke.

Harbor Commissioner W. G. Welt; James Black, president, P. G. & E.; Tom Cuffe, president, Pacific Far East Line; Elliott McAllister, president, Bank of California.

William Sexton, president, Coastwise Line; General Robert H. Wylie, Port Manager; Henry Clark, president, Pacific Maritime Association; Harbor Commissioner Welt.

Commissioner Joseph Carson; E. H. Harms; General Fleming; Lloyd Fleming.

With a Labor Group

SECOND FROM BOTTOM

Commissioners Fleming and Carson and Congressman John Allen (center) with a group of labor leaders.

At the Commonwealth Club

BOTTOM, LEFT

T. Douglas MacMullen, editor, Pacific Marine Review; Albert Gatov, president, Pacific American Steamship Association; Congressman Allen; Judge M. T. Dooling, vice president, Commonwealth Club; General Fleming.

At the Embarcadero Y.M.C.A.

TOP OF PAGE—LEFT TO RIGHT: O. C. Hansen, past president, Board of Managers; Charles Cothran, presenting honorary memberships in the Merchant Seamen's Club to Commissioners Fleming and Carson; Port Chaplain Kjeldahl; General Fleming; Commissioner Carson; Charles D. Marshall, general manager, Maritime Commission.

At the Shipyard Forum

BELOW, LEFT TO RIGHT: Commissioner Carson; General Fleming; Congressman Murphy of New York; Congressman Allen of California.

nd Carson
oast

At Los Angeles' Coconut Grove

TOP, LEFT TO RIGHT: Mayor Bowron, speaking; Jack Carson of the stage, screen and radio; General Fleming; Ned Dearborn, national president, Safety Council; Arthur Stewart, vice president, Union Oil Company.

BOTTOM. Left side going back: Mrs. and Mr. L. C. Munson; Mrs. and Mr. J. H. Fox; Mr. and Mrs. George Talmadge; Tim Reagan; Mr. and Mrs. Max G. Linder; George Bushnell. Right side going back: Mr. and Mrs. Howard Woodruff; Mr. and Mrs. E. J. Junker; Mr. and Mrs. Cliff Schwarberg; Mr. and Mrs. Irving Koppel; Mrs. George Bushnell.

RIGHT, TOP TO BOTTOM:

Left side going back: Carl Martin; J. E. Bell; C. F. Gorman; Capt. Ed. Joyce; Harry G. Regan. Right side coming forward: W. C. Ryan; J. S. Sideo; H. Thomas; J. M. Tescher; T. M. Lee.

American President Lines Table. Left side going back: Ron DeLong; Mrs. Paul Hurschler; Edgar M. Wilson; Mrs. Neil Marsh; S. J. Hindle. Right side coming forward: Mrs. Ron DeLong; Neil Marsh; Mrs. Edgar M. Wilson; Paul Hurschler; Mrs. S. J. Hindle.

Harbor Board. Left side going back: E. J. Amar; A. E. "Gus" Gram; Edwel Newton; Alvin K. Maddy; Edward Amar. Right side coming forward: Raymond C. Kealer; R. D. Elliott; James Craig; Emmett L. Sullivan; Irving Smith.

Gladding-McBean Table. Left side going back: R. E. Dunn; Ben Cake; Mr. and Mrs. Ben Taylor; Mr. and Mrs. Jack Fletcher; Mrs. and Mr. Homer Dye; Mrs. and Mr. Malcolm Post. Right side coming forward: Mrs. and Mr. Russ Walton; Mrs. and Mr. Earl Dundas; Mr. and Mrs. A. M. Sidman; Mrs. and Mr. Lee Bennett; Mr. and Mrs. Conoun.

While on the Pacific Coast—

At the Commonwealth Club, San Francisco, Arthur Pool, vice president, George Killion, president, and John Conway, assistant to the president, of American President Lines, snapped during the luncheon which was addressed by General Fleming.

THE VISIT to the Pacific Coast during January of Maritime Commission Chairman Philip B. Fleming and Commissioner Joseph K. Carson was highlighted by visits to points of interest to the Commission and by meetings of important maritime groups, all of which were attended by outstanding leaders of the industry who were anxious to meet General Fleming and to hear his comprehensive addresses on the condition and future of the Merchant Marine. Much of the material contained in these addresses was published in the December *Pacific Marine Review* on the occasion of General Fleming's talk before the American Merchant Marine Conference in New York, so it will not be repeated here.

One of the great meetings on the Pacific Coast was a combined session of the Propeller Club of Los Angeles and the National Safety Council, held in the Cocoanut Grove of the Ambassador Hotel. In San Francisco addresses were made before the Propeller Club in conjunction with the World Trade Association and the Commercial Club and at the Commonwealth Club of California. Private dinner meetings were arranged by the Pacific American Steamship Association and by Jos. A. Moore.

Important to the shipyard interests was a forum on shipbuilding and ship repair, held in the Customs Courtroom in the Appraisers Building, which was presided over by General Fleming assisted by Commissioner Carson and Congressman James J. Murphy of New York and John J. Allen of California, with shipyard interests represented by delegations from Seattle, Portland, San Francisco and Los Angeles, and by labor representatives whose opinions were presented by one or more spokesmen from each group. Matters in controversy between shipyards were introduced but the major problem presented at the forum was the lack of shipbuilding on the Pacific Coast, with all groups urging that a way be found for distributing shipbuilding and ship repair on a more equal basis around the country. Quotations from statements by Philip Lemler, General Manager of Todd's San Francisco Division, and Tom Ingersoll, General Manager of Bethlehem's Pacific Coast Shipbuilding Division, follow:

"As we see it, there are two basic responsibilities which have been accepted by the ship repair industry. The first is to service our Merchant Marine—quickly, correctly and economically. The second responsibility partakes of the nature of a custodianship, at our own expense, of a national reserve of ship repair capacity, both physical and organizational, this capacity to be operating and ready for the Country's use in times of emergency. These responsibilities we have met up to the present time—but not without some casualties.

"To obviate the possibility of further casualties, it is altogether proper to state that our industry will need help if we are to continue to meet our responsibilities.

"We are not inferring that as an industry we cannot help ourselves on problems within our working control —we can and we will—but the help that we need must come from the Government. This help is essentially in two categories. The first one—which to the ship repair industry could be powerful—is to come to the relief of the *shipping industry* in order that the slide-back of this industry be stopped abruptly and shipping started on its way up again.

AT SEATTLE—
Left to right: Gilbert W. Skinner, president of Alaska S. S. Co.; Col. Warren D. Lamport; General Fleming; Joseph Carson. Joe knows that there is sunshine up there somewhere, and that he can bring it out if anyone can.

"As the shipping industry goes, so go the repair yards. This refers not only to numbers of ships which come to our yards but also to the degree of maintenance and *betterments* on the ships. Much more could be done by the owners under more favorable conditions to keep their ships first-class in every respect. To this end, we urge most strongly that the Maritime Commission continue to support, directly and vigorously, the early enactment into law of H.R. 5346. The wholehearted support of other interested Government bodies and of the public must be won, also.

"Further, and to the same end, we urge that the Maritime Commission continue to spearhead the efforts of the shipping industry to revive the intercoastal trade, difficult though this may be, and involving as it does a clash with the Nation's freight rate structures, as well as the problem of the Panama Canal tolls. The promotion of the intercoastal trade would increase not only the number of American flag ships on the oceans but also would help tune up the Nation's terminal facilities for their proper role in National Defense.

"We believe that you and our congressional proponents should intensify the drive for the funds to repair the military type ships in the laid-up fleet and to place them in a satisfactory condition of preservation.

"We also believe that you should assist the ship repair industry strongly in influencing the Secretary of Defense and the Secretary of the Navy to reappraise the Navy ship repair policy against a background of more active utilization of the defense facilities now operated by private industry. We ask that a substantial amount of naval ship repair and alteration work now done by the naval shipyards be done instead by the private ship repair industry, for the sound reason that the facilities and organizations of the ship repair companies are no less important to the defense than those of the naval shipyards. We believe this can be done without real detriment to the naval shipyards. We also believe that failure to do it will be real detriment to the national defense as a whole.

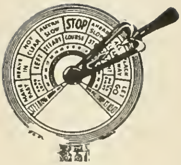
"In this connection I am sure you will be interested in the following: the total average production employment on private ship repair work in all yards on the West Coast in the last quarter of 1949 passed through 3,000 on its way down, while in the four West Coast naval shipyards during the same period the average employment on ship work alone was 13,000. Stated otherwise, the total average employment by private operators on the entire West Coast was less than the employment in one average West Coast naval shipyard. Surely there is something wrong here.

"About the ability of the integrated ship repair yards to handle work on naval ships, we might state that we have the facilities, the skills, and the managements. We did it during the war. We have not yet lost these facilities, skills, or managements. We should know from our experience in 1941 that it would be well to insure that they will not be lost."

A dinner gathering of friends of Jos. A. Moore, honoring Major General Philip B. Fleming at San Francisco.

Steady as you go!

KNOWLEDGE IS THE STRAIGHT COURSE TO ADVANCEMENT



A Department for Deck Officers

by "The Skipper"

Questions Welcomed. Just Address "The Skipper," Pacific Marine Review, 580 Market St., San Francisco, California

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Navigation Shortcuts

NAVIGATION is making advances, just as everything else in this busy world of ours. Much thought, time and effort is given to developing ways and means of reducing the man-hours required to do a given task. This is important in the field of Navigation as well as any other field. As less time is required for the determination of a ship's position, more time is allowed for other phases of the navigator's work, thus contributing toward more efficient operation of the vessel.

In recent years there has been made available a number of publications which help reduce the time consumed in determining the ship's position. The two latest of these are H.O. 249 and the 1950 style of a Nautical Almanac.

Prior to the 1950 Nautical Almanac H.O. 249 (Star Tables for Air Navigation) could be used equally as well with the Air Almanac or it could be used with the Nautical Almanac with only a little more time required but now the combination of the use of the 1950 Nautical Almanac and H.O. 249 is a natural time saver for the Mariner.

It has recently come to my attention that a large percentage of practicing navigators are unfamiliar with the combined use of these two publications. It is for those that this article is intended. To give an idea of the simplicity of their use as well as the practicability I cite this instance. Recently I talked with a young navigator who was unfamiliar with both. After he had devoted some two hours to the study of them with a little instruction he worked out a set of four star sights in six minutes and was ready to plot them. In another case an old-timer who had never worked anything but the Old Time Sight (Time consuming time sight—I should say) was rather dubious of his ability to change his methods after so many years on one method.

After being convinced that he might; and studying for some three hours, he was working four-star sights in ten minutes and still improving.

H.O. 249 as has already been indicated is used for star sights only. The one volume covers from Latitude 89° North to 89° South. Though it was designed for Air Navigation it may be used for surface navigation with only a slight difference in the accuracy between it and other short methods. The cost of the one volume is only two dollars so that phase is not prohibitive even though it will need to be replaced every four years.

Enough of this sales talk. Now for a description and explanation of their use. First let us take up H.O. 249. This publication has the tabulated altitude and true bearing of thirty-eight of the major navigational stars. They are listed six at a time in a horizontal line. The arguments used in determining which should be listed for any particular time are: (1) Latitude, (2) Local Hour Angle of the Vernal Equinox, (3) Their Magnitude, (4) The true bearing they will subtend from a given Latitude at a given Local Siderial Time, (5) The most preferable altitude. The order of arrangement varies for every 15 or 30 degrees change of the Local Hour Angle of the Vernal Equinox so as to give the observer the stars which will offer the most desirable altitude and bearing for a fix.

The altitude and true bearing of the six stars is tabulated for every degree of L.H.A. of the Vernal Equinox, and the only arguments needed for determining the tabulated altitude and true bearing of any particular star is the Latitude (to the nearest whole degree) and the L.H.A. of the Vernal Equinox. The altitude is tabulated to the nearest minute and the bearing is tabulated to the nearest degree, both of which are close enough for all practical off-shore navigation.

For surface navigation the only corrections required are the correction for dip or height of eye and the adjustment to the assumed Longitude as shown in table 2 on the inside of the front cover which remains almost constant throughout the year.

Now for a brief description of the 1950 Nautical

Almanac insofar as its use in connection with H.O. 249 is concerned. All we need from the Almanac is the Greenwich Hour Angle of the Vernal Equinox. This is found in two simple operations. First in the white section or the daily pages we find given in the leftmost column of each daily page the Greenwich Civil Time in hours for the three dates listed at the top of the page. On the left page (or the even numbered pages) in the column adjacent to the G.C.T. we find tabulated the G.H.A. of the Vernal Equinox for each hour of G.C.T. for the three days listed at the top of the page. After taking out the G.H.A. of the Vernal Equinox for the correct hour of G.C.T. and date we turn to the yellow section toward the back of the Almanac. In this yellow section we find the correction to the G.H.A. of the Vernal Equinox for the minutes and seconds of G.C.T. of the observation.

Each page contains corrections for two minutes, listed horizontaly across the top of the page with the interpolation for the seconds listed vertically. Thus in two simple operations we find the G.H.A. of the Vernal Equinox and by applying our assumed Longitude we find the Local Hour Angle of the Vernal Equinox. With this and the name of the Star observed and assuming the Latitude to an even degree which is nearest our Dead Reckoning Latitude we have all the data necessary to enter H.O. 249.

Perhaps a more easily understood method of explanation of the uses of these two publications would be an example.

Let us assume that an observer on a vessel in D.R. Lat. 31° 15′ N., Long. 139° 15′ W. on Jan. 8, 1950 made morning star observations of the following Stars at the Greenwich Civil Time and sextant altitude shown in the following form, from a forty-five foot height of eye.

The form used for the example is one which seems the most satisfactory for we merchant marine officers who keep our own work book. The form is short, neat and easily remembered. As can be seen it will allow some three sets of four or five star fixes on a single sheet of work book. (See illustration.)

First after having entered on a form the name of the star and the G.C.T. of observation and the sextant altitude, we apply the correction to the sextant altitude for H.E., which is the only correction needed. This of course will be the same for all sights taken. Now we turn to the correct date in the daily pages (white section) of the 1950 Almanac and pick out the G.H.A. of the Vernal Equinox for the correct hour of G.C.T. In this case 16^h and 347° 37′ .9. We enter this in the form under each star opposite G.H.A. of V.E. as shown. Now we turn to the yellow section of the 1950 Almanac and pick out the correction to the G.H.A. of V.E. for the minutes and seconds of the G.C.T. of the observation and enter them on the form under the respective Star opposite the correction for m & s. After adding the correction for m & s to the G.H.A. of V.E. we assume and apply a Longitude nearest our D.R. Longitude whose minutes and tenths of minutes match exactly the minutes and tenths of minutes of the G.H.A. of V.E. at observation thus giving us the L.H.A. of V.E. in whole degrees at the instant of observation. (NOTE: In East Longitude we assume a Longitude, nearest our D.R. Longitude, whose minutes and tenths of minutes are the exact difference between the minutes and tenths of minutes of the G.H.A. of V.E. and 60 minutes.)

With this data we enter H.O. 249 at the nearest tabulated Latitude to our D.R. Latitude and under the proper star opposite the L.H.A. of V.E. we pick out and enter on our form in their respective places the Hc and True bearing. Then by applying the Hc to the Ho we get the altitude intercept just as in any of the other Line of Position Methods.

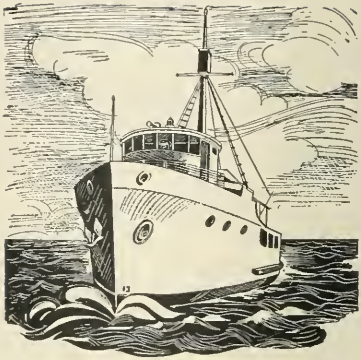
With this altitude intercept and true bearing we plot

(Please turn to page 117)

FORM MENTIONED IN THE TEXT

STAR	VEGA	SPICA	REGULUS	DUBkE
G.C.T. Jan 8.	16-01-12	16-03-30	16-05-12	16-06-45
H_s	33°32'.8	47°13'.1	33°28'.0	48°00'.9
Correction for H.E.	6'.6	6'.6	6'.6	6'.6
H_o	33°26'.2	47°06'.5	33°21'.4	47°54'.3
H_C	33°36'.0	47°22'.0	33°04'.0	47°44'.0
Intercept	away 9'.8	away 15'.5	toward17'.4	toward10'.3
True Bearing	061°	192°	264°	331°
G.H.A. of V.E.	347°37'.9	347°37'.9	347°37'.9	347°37'.9
Correction for m & s	18'.0	52'.6	1°18'.2	1°41'.5
G.H.A. of V.E. at obs.	347°55'.9	348°30'.5	348°56'.1	349°19'.4
Assumed Long.	138°55'.9	139°30'.5	138°56'.1	139°19'.4
L.H.A. of V.E.	209°	209°	210°	210°

Coast COMMERCIAL CRAFT



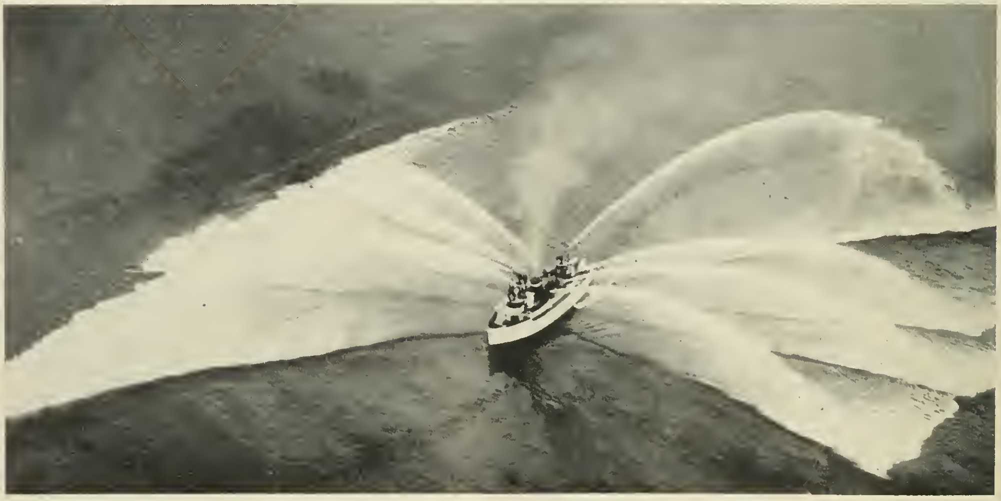
Seattle's Fireboat—"Duwamish"

Said to be the largest fireboat in the world, the steam driven fireboat *Duwamish* was originally constructed at Puget Sound Ship Building Co., Richmond Beach, Washington, in the year 1909. After forty years of service, the City of Seattle decided to completely rebuild and modernize this craft, since upon survey the hull was found to be in excellent condition in spite of her age.

The work was performed by Commercial Ship Repair at their Winslow, Washington plant. The conversion briefly consisted of the following:

The vessel was completely gutted to the bare shell; boilers, engines, pumps, auxiliaries, foundations, etc.,

Fireboat "Duwamish" under way with all 8 monitors under full operation, pressure 100 pounds.



removed; and a completely new power plant installed for propulsion and pumping.

The vessel is equipped for diesel electric drive with two propellers. There are three diesel-driven generators, two propulsion motors with reduction gears and two pump motors directly connected to centrifugal pumps. Two ship's service diesel driven generators provide electric drive for all independent auxiliary machinery.

The boat is 113 feet long with a 28 foot beam and 14 foot draft, with machinery as follows:

Three Cooper-Bessemer eight cylinder G.B.S. Diesel engines rated at 950 H.P. at 750 R.P.M.

Three General Electric Corp., Type M.P.C. generators rated at 610 K.W. at 750 R.P.M.

Four main motors, General Electric Corp., rated at 765 H.P. at 1045 R.P.M. Motors are designed for two shaft, four motor propulsion, two motors driving one shaft, three Farrell-Bermingham reduction gears with flexible couplings and Kingsbury thrust bearings.

Mayor William F. Devin, Melodee Black, four year old daughter and Merlene Black, seven year old daughter of Edward A. Black, co-owner of Commercial Ship Repair, Seattle, presenting plaque to Chief William Fitzgerald, Chief of Seattle Fire Department, at the official presentation of the Fireboat to the City of Seattle.

Two ship's service generators are General Motors, Type 6-71, Diesel and Westinghouse 50 K.W. generators 1200 R.P.M., 120 V.—D.C.

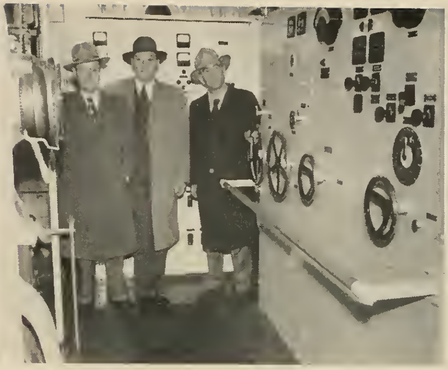
Fire Pumps

Two "DeLaval" centrifugal pumps capable of discharging salt water as follows:

Parallel or Single Pumping
9440 G.P.M. *each* at 120 p.s.i.
Series Pumping
1140 G.P.M. at 200 p.s.i.
9000 G.P.M. at 250 p.s.i.

All firemain valves in engine room are "Rensselaer" square bottom construction, hydraulically operated.

Vessel is fitted with eight monitors on deck with hydraulically operated valves and two 6-valve manifolds for hose connections.



Left to right: Arthur H. Lindgren, General Manager of Winslow Division, Commercial Ship Repair; Herman Sanwick, Marine Superintendent in charge of conversion of fireboat; and Bill Jones, Chief Engineer for fireboat; in the engine room of the "Duwamish" looking over main switchboards.

Four Brown Engineering Company underwater force jets, two port and two starboard, are used for maneuvering the vessel in close quarters or to offset the thrust when monitors are operating from one side of the vessel only. Also a six inch bronze salvage eductor manufactured by the same company is used in salvage work.

During dock and sea trials all fire pumps, firemain loops, piping and monitors were tested and far exceeded requirements, pumping approximately 24,000 G.P.M. at 100 p.s.i. with all monitors going.

The City of Seattle is fortunate in being able to obtain the world's most modern fireboat, for a total outlay of approximately $200,000 since it has been estimated that to duplicate this vessel, using machinery and equipment purchased on the open market, would cost well in excess of $1,250,000

Fireboat "Duwamish" under way with seven monitors under operation, with the skyline of the City of Seattle in the background.

"Petrina F"

—Salvaged Seiner Drydocked at Todd's

Pilot house view of "Petrina F."

Successful drydocking of the salvaged purse seiner *Petrina F.*, which sank in 200 feet of water off Point San Luis (California) late in December, was completed recently at the Los Angeles Division of Todd Shipyards Corporation. Wilvers & DeFever, 1225½ South Leland Street, San Pedro, were surveyors for the underwriters in the unusual operation.

The vessel, 78 feet in length, of 97 gross tons and with a beam of 22½ feet, had completed a haul and while stowing her cargo was caught in a heavy swell and capsized, sinking with approximately 80 tons of fish aboard.

When raised, she was kept afloat by means of stowed 50-gallon barrels and 15-gallon drums, and was towed into Todd's yard with a portion of her stern and only three feet of the bridge and pilot house exposed above water. The draft fore and aft was 20′ and 10′, respectively, compared with her normal mean draft of 8′6″.

Preparatory to drydocking, the forward section was encircled with heavy wire rope slings and connected to the wharf gantry crane for raising the vessel to an even horizontal position. With the aid of the crane and lines from the wharf and drydock, she was then guided over the submerged drydock.

Special shoring blocks were built in the event of crushed ribbing, as the structure condition of her under-

Stern view of "Petrina F," looking forward.

Bow view.

Dockside view of "Petrina F," looking aft.

Dockside view, looking forward.

water damage was unknown. With extra lines secured to her main deck from the drydock wing walls, she was centered over the drydock keel blocks and slowly raised.

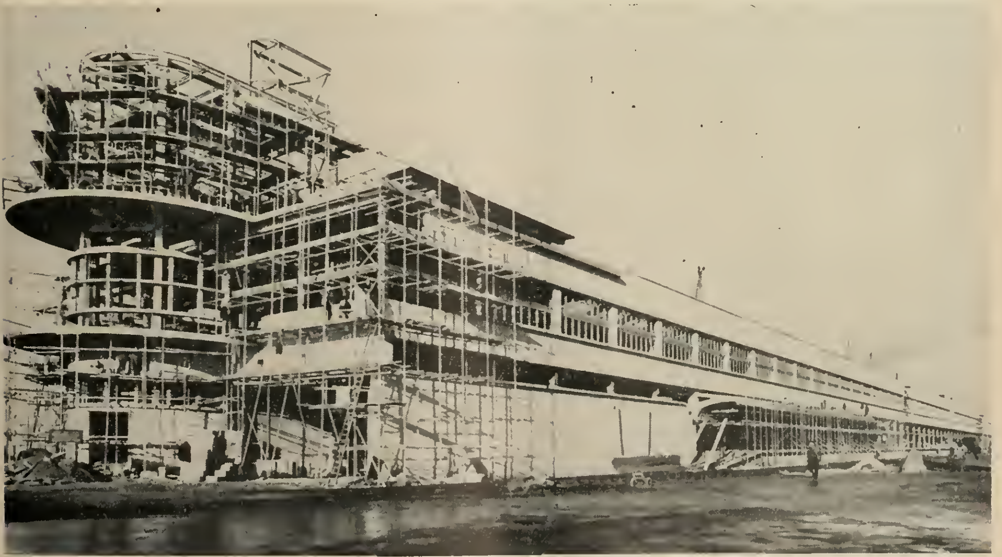
Water and debris escaped through the rents in her hull for some time after the dock had lifted her clear of water, and as soon as the confined waters had subsided the battens were removed from the fish hold and engine room for the removal of the oil drums.

Approximately 15 tons of sardines remained in the vessel after salvage operations and were scattered throughout the entire ship and considerable difficulty was encountered in removing them.

After the cleaning operations were completed, the main and auxiliary engines were opened for examination and flushed with oil as a protection from further salt water damage.

New Southampton Terminal

A new 1,000 foot Ocean Terminal (below) nearing completion at Southampton, will soon enable New York to London passengers on the Cunard White Star "Queens" and other lines to transfer from ship to train completely under cover. Passengers will land and pass through customs on the upper level of the terminal; then take a special express train to London which will run from the lower lever. The terminal will also be equipped with telephone booths, information bureaus and other passenger services.



- - With The

March Meeting Of San Francisco Society

The next regular meeting of the Port Engineers will be held on Wednesday, March 1, 1950, at 6:30 P.M. in Angelo's Restaurant, 4307 San Pablo Avenue, Emeryville, Calif. Entertainment will go with the dinner.

Members coming by Key System trains will take C, E or F trains at San Francisco Bridge Terminal and get off at San Pablo. Angelo's is in sight.

Your Program Chairman, Marshall T. J. Garlinger, has arranged a special Marine Steam and Electrical demonstration which will cover steam turbine dynamic balance and repair. Electrical reconstructions will be shown.

All of the demonstrations will be given by the Westinghouse Electric Corporation in the Westinghouse Shops at Powell and Pelladeau Streets, Emeryville. The shops are a short distance from Angelo's.

E. S. Holt, Plant Manager, C. H. Sandal, in charge of Turbine Reconstruction, and E. H. Haussler, Electrical Engineer, will be the speakers.

This meeting promises to be a most enjoyable one; good eats, entertainment, lecture and demonstration.

February Meeting San Francisco Society

T. H. Pitt (left), head of T. H. Pitt Company, distributors for "Rust-Oleum" in San Francisco Bay region, hears J. R. Boren, Western factory representative, describe the application of his product at the San Francisco meeting.

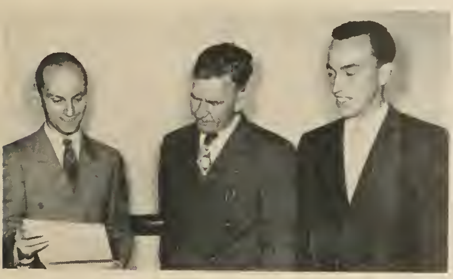
January Meeting Los Angeles-Long Beach Society

The Los Angeles-Long Beach Society of Port Engineers held their January meeting at Victor Hugo's Restaurant, Long Beach. Speaker of the evening was G. French, Manager, Products Research and Development, Richfield Oil Company, who is shown in the top picture at the left.

Center: In this picture are: J. S. Spurk, General Electric; Dayle W. Lyke, General Electric; Edw. Pike, American Bureau of Shipping; Frank Cavanaugh, Cavanaugh Machine Works; Joe Costello, Costello Supply; Paul V. Gaudin, American Pacific S. S. Co.; Hamp Neergard, Neergaard Co.; Glenn Gulvin, American Pacific S. S. Co.; George Curran, American Pacific S. S. Co.; George Hoxie, American President Lines; George Bradford, Brown & Brown Machine Co.; George McCoy, Marsol Corp.; Ray Sullivan, Hagan Corp.; Walter Richards, Wilmington Iron Works; Phil Flaig, General Electric.

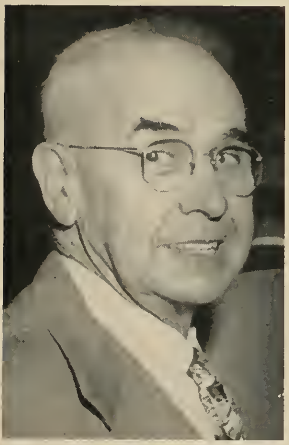
Bottom: Recognize these? Hamp Neergaard; Ray Jones, General Petroleum; Bert Hale, Marsol Corp.; Dan Dobler, The Texas Co.; Glenn Gulvin; Walter Richards; George Bradford; Edsel Newton, Long Beach Press Telegram; Tommy Atkinson, Wilmington Engineering Service; Dayle Lyke; C. P. Snively, World Wide Tankers; Edw. Pike; C. T. Duggan, American Pacific S. S. Co.

Port Engineers - - Officers of S. F. Society



Right: E. P. (Jack) Butler, Gamlen Chemical Company, new member of Board of Governors of San Francisco Society, and Bob Streiff, retired president, now Chairman of Board of Governors.

Left: New officers of San Francisco Port Engineers, looking over the 1950 roster. Left to right: Secretary George Harlan, President Ira Chapman, and Vice President Jim Stasek.



John A. Harris

More on Old Timers' Night

The old timers night pictures which appeared in the January *Pacific Marine Review* were suggestive of the spirit of a meeting which was highlighted by enthralling accounts of ships and men of the past. Captain R. O. Demarest of Sudden & Christenson and Jack Harris of Army Transport drew on their remarkable memories for incidents and personalities from their sailing days. Here are good pictures of Captain Demarest (right) and Jack Harris (left.)

Capt. R. O. Demarest

Right: This fine looking group includes, left to right: The Marshall, M. T. J. Garlinger, Bill Sizemore, Bob Parkin, Jim A. Stasek and George Harlan.

Below: Capt. Demarest and Louis A. Deppman, both of Sudden and Christenson, and Alex Johnston of Pacific Marine Refrigeration, snapped at Old Timers' night at San Francisco Port Engineers.

1950 OFFICERS, SAN FRANCISCO SOCIETY OF PORT ENGINEERS

With the election of Ira Chapman as president of the San Francisco Society and the election or re-election of members of the Board of Governors, we are publishing below the up-to-date list for 1950. Please paste this strip across the membership roster published in the January *Pacific Marine Review*.

Also add to the list of members the name of Alex Johnston, president Pacific Marine Refrigeration Company, 181 Steuart Street, San Francisco.

1950 OFFICERS

President
Ira B. Chapman
Vice President
James A. Stasek

Secretary-Treasurer
George H. Harlan
Chairman of Board of Governors
Robert I. Streiff

MEMBERS OF THE BOARD OF GOVERNORS

Term expires December 1950	*Term expires December 1951*	*Term expires December 1952*
Ira B. Chapman (*President*)	M. Charles Wright	H. Lee Kincaid
Vincent E. Foell	Joseph Gisler	M. T. J. Garlinger
Frank Smith	Harry Martin	E. P. (Jack) Butler
Philip H. Thearle	H. A. Steiner	Robert J. Streiff (*Chairman*)

Santa at Sea

'Twas the night before Christmas all through the plant,
The pumps were all running and troubles were scant.
Wet clothing was hung on the railing with care,
In hopes that the First wouldn't discover them there.
I in the fireroom with coffee in hand,
The Third at the throttle, as orders demand.
The burners were changed, and the bilges were dry,
The bearings were cool, and the vacuum was high.
Just then I was resting, and so was the Third,
All of a sudden from the fidley we heard
A terrible noise and a crash and a cry.
"My Gawd," said the Third, "The D.C. has gone dry!"
I rushed up the ladder to offer my help,
When out from the fidley, we heard someone yelp:
"Oh Donder and Blitzen, it's me your Old Chris,
Pray, tell me what kind of a chimney is this?"
"The D.C. is O.K., I'm sure," said the Third,
"But what in the world were those noises we heard?"
So up the ladders we sped on the double,
"It might," said the Third, "be economizer trouble."
We went to the uptakes just fearing the worst,
When out from the manhole a black figure burst.
He was covered with soot, beard still a-smoulder,
What was left of a sack hung at his shoulder.
"Good thing," said the Third, with a smile on his lips,
"That all we had in was size fifty-four tips."
Old Chris was confused and not quite at his ease.
"Tell me, kind gentlemen," said he, "Will you please,
What sort of a furnace is this I have found,
With a little square door and pipes all around?"
"Many chimneys I've seen in travels ashore,
But never one as hot as this one before."
"Here," said the Third, "we don't like to trouble you,
But this, my friend, is an old B and W."
"Well, well," said Santa, "I've seen everything now,
But I must be leaving, for I've made a vow,
To bring all the children nice presents and cheer.
First, tell me if you have been good through the year."
"We really have tried to be good," answered I,
"But then our ship docked at Manila, P.I."
"Don't say any more," said Old Chris with a wink,
"I've got something here that will make you both blink."
From out his hip pocket he pulled out a flask,
"Just one," said the Third, "then we're back to our task."
We each took a swallow, and Old Nick took four,
Then staggered across to the soot-covered door.
"Merry Christmas to all!" he joyously said,
"Come on Dancer and Prancer, full speed ahead."

DARBY K. HABERERN
Jr. Third Engineer USAT
"Gen. Simon B. Buckner",
Fort Mason, California, USA

Darby K. Haberern, author of "Santa at Sea."

Pacific
WORLD
TRADE
Reg. U. S. Pat. Off.

Current World Trade Data

The following current information concerning trade with foreign countries is quoted from the Foreign Trade Bulletin of the American National Bank of Chicago through the courtesy of A M. Strong, vice president. Complete details regarding any matter mentioned can be obtained from their Foreign Department While the data has been compiled from sources which they consider reliable, it is disseminated without responsibility on their part.

Japan

Private imports were established in Japan as of January 1, 1950 in conformance with the recent Foreign Exchange and Trade Control Law. A SCAP (Supreme Commander for the Allied Powers) release of December 27, 1949 outlines the following changes in the return of much of Japan's import trade to normal channels.

"The Supreme Commander has authorized the transfer of control of the equivalent of 67 million dollars in pounds sterling and US dollars to the Japanese Government. The Bank of Japan, acting as agent for the Foreign Exchange Control Board, will take control of these funds for the account of the Supreme Commander with full authority to delegate and redelegate its powers of operation to the Foreign Exchange Bank in order to facilitate the implementation of private imports in accordance with foreign exchange control law and under SCAP surveillance.

"Appropriate government agencies will publish lists of goods and payments for which import licenses will be considered. Importers may apply directly to designated foreign exchange banks for licenses with which to effect private procurements in accordance with such lists.

"Licenses will be considered by banks in accordance with fund availabilities as determined by the Bank of Japan as agent for the Foreign Exchange Control Board, and in general be issued on a first-come-first-served basis. The license will assure the importer that he may purchase with yen the foreign exchange needed to consummate his approved import.

"Prior approval of appropriate government agencies is required for specified import transactions of a special nature. These requirements will be relaxed as rapidly as possible.

"Goods and payments to be authorized have been programmed in a quarterly foreign exchange budget which has been carefully prepared by the Japanese Government and reviewed by General MacArthur's Headquarters.

"The Bank of Japan as agent for the Foreign Exchange Control Board will take title to the transferred funds on behalf of the Japanese government and will be responsible for maintaining central records and determining fund and credit availabilities upon which banks can issue imports licenses.

"Open accounts under trade arrangements will be operated as at present until agreements can be finalized to permit such accounts to be maintained by the Japanese Government. In the interim Japanese Banks will be permitted to draw on such accounts in accordance with approved procedures and principles.

"Adequate funds and specified portions of export proceeds will be retained in SCAP accounts to safeguard outstanding liabilities against these accounts. As liabilities are liquidated, additional funds will be released from the SCAP account.

"Negotiations are being initiated immediately to open correspondent relations between Japanese and outside banks to normalize commercial practices and to pave the way for future credit lines to Japanese banks."

Further details concerning the new import procedures, which are still to be announced, will be published in FOREIGN COMMERCE WEEKLY as they become available. Imports purchased by appropriated funds continue to be handled on a government level.

The Japanese government has announced further details concerning the private import system established as of January 1, 1950.

In conformance with the implementing regulations and the announcements of the appropriate Ministries of the Japanese Government, a system of exchange allocations and licensing for imports on a private basis has now been put into effect. However, imports purchased by United States appropriated funds, which constitute a large part of Japanese imports, continue to be handled on the Government level.

Under the new procedure for private imports, quarterly foreign exchange budgets, which are prepared by the Japanese Government and reviewed by SCAP, will constitute the basis upon which allocations of foreign exchange for specific imports will be made to private Japanese importers These budgets, in addition to listing by commodity the amount of foreign exchange to be made available during the quarter for which import licenses are to be granted, will also indicate the following: The source of each commodity; whether special foreign exchange allocation certificates are required as a condition for obtaining an import license: the opening and closing dates for filing applications; and the percentage of collateral required as a guarantee that the prospective importer will be able to fulfill his obligations.

An announcement concerning imports for the first quarter's budget was issued by the Japanese Ministry of International Trade and Industry on December 29, 1949. It indicates that this is the first of a series to be issued from time to time. Although the language of the announcement is not clear, it may presumably mean that additional announcements may be made covering imports to be made during the first quarter of 1950. The import limit included in this first announcement is $6,667,500 covering approximately 27 commodities, and an additional $6,000 is allocated for purchases of miscellaneous commodities. Most of the commodities included in the first list are to be purchased from countries with which Japan has trade and financial agreements.

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Alberto Martinez, Jr.

It is apparent that the imports allocated under the first announcement will constitute only a small part of total imports expected to be contracted for during the first quarter of 1950. The list does not include any food items, and many raw materials, such as raw cotton, will be supplied in much larger quantities on a Government level since such imports will be purchased largely with United States appropriated funds rather than with proceeds from Japanese exports.

Export Credit Information On Latin American Countries

The following is a release of the Federal Reserve Bank of New York, dated January 17, 1950:

"Two important developments were evident during December in the Latin American export collection experience of the 15 monthly reporting banks. First, the total of drafts sent out for collection but not yet paid declined by 16 million dollars. This was the largest monthly decline so far recorded and reduced the total Latin American draft indebtedness reported by these banks to 161 million dollars. Second, the total number of collections paid during the month rose by 3,883 items to 22,335, the largest number paid in any month of 1949.

"In the case of both developments, Brazil accounted for most of the change. During December that country reduced its draft indebtedness, as reported by the 15 banks, by 18 million dollars, from 115 million dollars to 97 million dollars. The December reduction in Brazil's draft indebtedness was the largest monthly change so far registered in these reports. Furthermore, the number of collection items paid by Brazil during the month was 5,895—more than double the number of items paid during November and the largest number paid since July, 1948.

"The dollar volume of export drafts outstanding against Argentina showed some decline in December, and smaller reductions were reported for Peru, Ecuador, and Guatemala. Colombia and Venezuela on the other hand, showed sizable increases in the dollar amount of outstanding draft indebtedness.

"The downward trend in the dollar amount of outstanding confirmed letters of credit was halted during December. These unused credits for Latin America increased by 3 million, to 122 million dollars."

Batavia Changed to "Jakarta"

Word has been received from the new republic of Indonesia that the famous port city of Batavia will hereafter be known as "Jakarta" and that all shipping papers covering shipments to Batavia must read "Jakarta." Steamship companies serving Indonesia from California are changing their sailing schedules to read "Jakarta" and have suggested that exporters do likewise.

Two New Books on Latin Amer. Trade

Reviewed by Carl E. McDowell
Associate Professor of Foreign Trade
Graduate School of Business, Stanford University

With increased emphasis on trading and investment possibilities in Latin America, we are not surprised to find two excellent publications on the subject. Both represent the product of accumulated years of experience on the part of the authors. Both are educational and essential to the purposes of business men and students alike.

Industry in Latin America, by George Wythe (Columbia University, 1949, $5.00) is the second edition of a publication that first appeared in 1945. Mr. Wythe is Chief of the American Republics Division of the U. S. Department of Commerce. His interest in industrialization in Latin America dates from the mid-20's, since which time he has published many articles and books. A fully mature judgment, a wealth of information, and a careful analysis of the implications as well as the problems of economic developments are reflected in his work. The book enumerates the industrial enterprises now operating in Latin America and appraises the advantages and disadvantages, the possibilities and the difficulties, and the pros and cons of further growth of the economies of the various countries. A restrained and somewhat matter-of-fact attitude is taken toward the problems of nationalism and Government controls.

How to Sell to Latin America, by Abram A. Preciado (Funk & Wagnalls, 1949, $4.00). is a popular but thoroughly competent handbook on all phases of trading and on the characteristics of the markets. Mr. Preciado, who majored at Stanford University in economics and law, has had a long career in newspaper work, government assignments, and travel in Latin America. Even old hands in world trade will find the contents useful for refreshing their memories on old and new facts, developments and trends. But many business men, newly awakened to the need for foreign trade, will discover here a satisfying handbook and reference book on potential markets in Latin America and how to do business with them. Section 2 is a market survey of the opportunities in each country. Section 3 advises one on "know-how" for profitable exporting. Section 1 is entitled "the background for successful exporting" and is probably more general in content than should be expected to interest most readers. Certain economic characteristics of Latin America may be intended to awaken the interests of new world traders and the chapter on the Export-Import Bank is helpful in this respect. The final part—Section 4—deals with international trade and financial agreements that concern business with this area of the world, and is a most helpful contribution in this day of government trading and government participation in almost all phases of international economic transactions.

Men whose commercial interests are specialized in transportation, communications, banking, and so forth will gain new perspective on their activities by examining the contents of these recent publications.

Fair Will Highlight World Trade Week

Highlighting World Trade Week this year, May 21-27, will be an "Expanded" World Trade Fair designed to show the importance of export-import trade and travel.

Under the direction of Victor L. Arenth, Southern Pacific Company, newly-appointed World Trade Fair chairman, the Fair will emphasize the variety of imported goods available in this area and prospects for travel to vacation lands throughout the world.

Scheduled to open May 23 and last through May 28, the Fair will be held in Scottish Rite Auditorium and will feature displays by over 100 exhibitors. Kriedt and Myers are managers of the Fair, and may be contacted at Suite 9028, Palace Hotel, for booking of exhibit space.

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411 Yeon Building
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Sydney D. Smith

New Officers Of Foreign Trade Association Of Southern California

President—Sydney D. Smith, district sales manager for Pan American Airways; First Vice President—E. D. Peralta, regional manager for the Western Union Cable System; Second Vice President—T. R. Stetson, export manager, Pacific Coast Borax Company; Secretary—Norman G. Hewson, customs attorney for the Southern Pacific Company; Treasurer—Leo C. Helfenberger, manager of the foreign department of the Union Bank & Trust Company.

Marine Insurance

Marine Casualties are Down, Reports Admiral

During the fiscal year ending June 30, there was a 25-per cent decrease in all marine casualties and a 35 per cent decrease in all marine casualties on vessels subject to Coast Guard inspection and certification, reported Rear Adm. H. C. Shepheard, chief of the Office of Merchant Marine Safety, in a recent address before the National Safety Council in Chicago.

The loss of life as a resulr of marine casualties, he said, went down 18 per cent, and there was a 41 per cent drop in the number of serious injuries. These decreases followed an 11 per cent reduction in the number of seagoing ships in operation.

The improving safety record, he said, was due to a higher degree of stability in maritime employment, a return to peacetime standards of proficiency of licensed and certificated personnel, a reduction in waivers in connection with both personnel and materiel, the return of authority to the Coast Guard to take disciplinary action, and the dissemination of casualty information.

"Actually self-regulation in the marine field is the most desired solution," Admiral Shepheard told the Council memers. "Therefore, I urge management of marine industry toward greater efforts to lessen ship accidents and personnel injuries. Only by showing an exemplary safety record could the industry be at all justified in seeking exceptions from certain proposals now under consideration which could easily produce a gigantic bureaucracy."

MANAGERS OF

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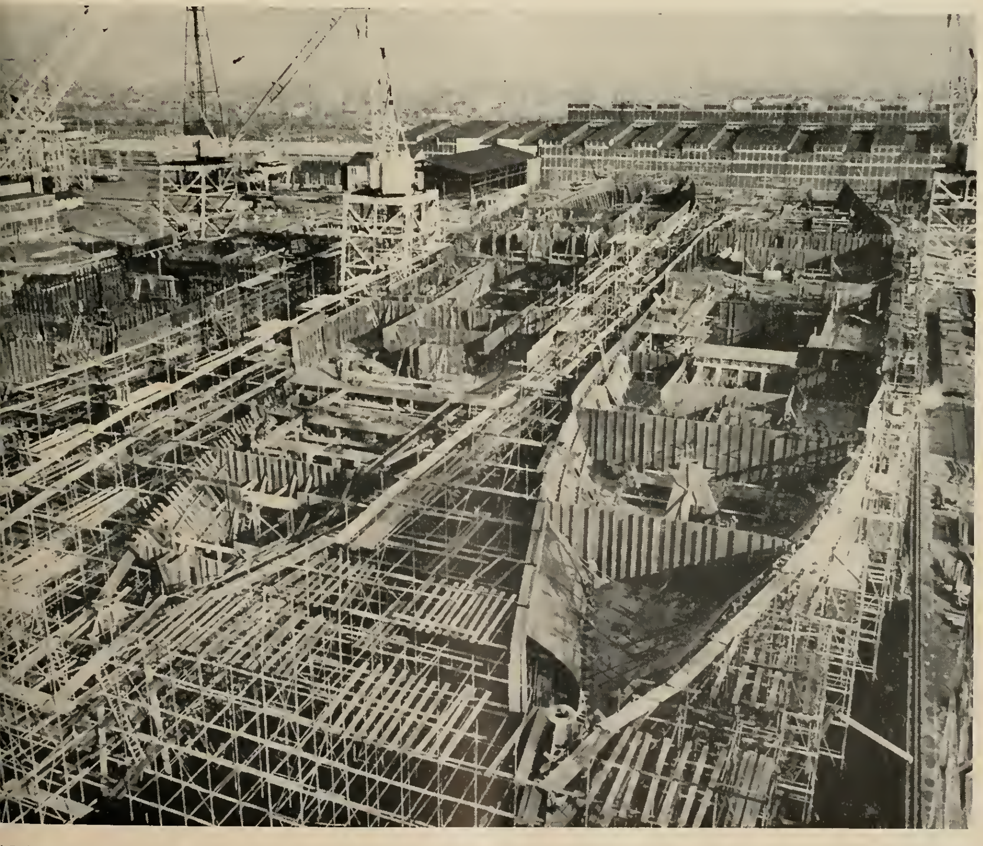
On the Ways

New Construction — Reconditioning — Repairs

APL's Round-the-World Ships Taking Form at New York Ship

In three adjoining "cradles" at the New York Shipbuilding yards at Camden, N. J., the embryonic vessels are the Presidents "Jackson," "Adams" and "Hayes," being constructed for American President Lines' around-the-world service. Each will cost $12,000,000, and provide accommodations for 200 passengers and half a million cubic feet of cargo space. These are the now-famous V-2000, elaborately described in various issues of Pacific Marine Review. Four additional ships are now in the planning stage for APL.



News Flashes

SHIPYARD REPAIR PROSPECTS

We have many inquiries regarding the amount of work out ahead for ship repair yards and have several sets of figures which can be used for estimating the cost of routine ship maintenance and repair. It is pointed out that maintenance and repair are inseparable in many company records, and that some of the cost is for the purchase of maintenance supplies, and part is for crew's overtime wages in carrying out certain repair work.

Each major port on the Pacific Coast is the home port for vessels of certain companies; for instance, San Francisco is the home port for 561 ocean-going cargo and passenger ships, including tankers, all privately owned. Of these, 75 are laid-up, leaving 486. All of the 486 will require annual inspection this year. In fact, there were in San Francisco Harbor during 1949 366 drydock inspections in addition to the required annuals.

Some ship operators have a maintenance and repair cost factor based on expenditures for a year, and some figure by the day. They work out about the same. The per day factor is $150 and the per year factor, $50,000. Either way the ships with home port at San Francisco will spend $25,000,000 for maintenance and repair this year. Some ships will be drydocked elsewhere and some ships with other home ports will be drydocked in San Francisco. Last year there were 48 foreign flag vessels drydocked in San Francisco Bay.

PAINT REQUIRED

Pacific Coast shipyards have a formula which they use as a guide in estimating the cost of a paint job on any ship that enters the yard for general overhaul. The following figures give the number of gallons of various kinds of paint as the average.

TYPE	UNDERWATER HULL				DEEP L.L. TO BULWARK		TOTAL
	Spot Up Primer	Anti-Cor. Keel to Deep L.L.	Anti-F. Keel to L.L.L.	Boottop	Spot Up Primer Topside	Topside Hull Color	
Liberty	50 gal.	175 gal.	115 gal.	65 gal.	20 gal.	90 gal.	515 gal.
Victory	50	185	120	65	20	85	525
C-1 Cargo	50	160	115	50	20	60	455
C-2 Cargo	50	175	125	55	25	85	515
C-3 Cargo	50	205	140	70	20	80	565
C-4 Cargo	60	255	185	70	25	125	710
T-2 Tanker	60	265	195	75	50	85	720
P-2 Alameda Type)	60	335	270	70	30	170	935
							8/ 4,940
						Average	620 gal.

There are many types and varying quantities of interior paints and lacquer which are too varied in quantity to be averaged. They are, however, the more expensive types of paint.

The table is an approximate average for vessels of these types; each vessel will vary in the amount of paint used due to the condition of vessel, the differences in the load lines and the types of paint used.

Note that combat vessels of the Army and Navy and various types owned by the Coast Guard and others are not included above.

FISHING CRAFT---Commercial fishing vessels operating in Pacific Coast waters of the U. S. total 20,000.

PLEASURE CRAFT---Pleasure boats 16 ft. long and over, operating on the Pacific Coast, total as follows: Southern Calif., 10,058; Northern Calif., 19,980; Northwest including Alaska, 48,851. Total, 78,889.

WORKBOATS---Workboats other than fishing craft operating on the Pacific Coast and inland waters total about 6,000.

* * * * *

FIRE BOAT AUTHORIZED FOR HAWAII

Ben Rush, Chief Engineer of Honolulu Fire Dept., has been authorized by Legislature of Hawaii to purchase a 95-foot fire boat with General Motors engines specified.

* * * * *

ARMY TRANSPORT "WALKER" SOUGHT BY A.P.L.

Maritime Commission Chairman Fleming announced in San Francisco that American President Lines would apply for the P-2 transport NELSON M. WALKER, if its suggestion for completion of the MONTEREY is not worked out. The WALKER would require less conversian work than the MEIGS and would replace the GENERAL GORDON which is operating under waivers from the Coast Guard.

* * * * *

NEXT BIG SHIP CONSTRUCTION PROGRAM MAY BE ORE CARRIERS

Several new fleets of ore carriers of up to 45,000 tons are said to be in the planning stage. Several big ones are now on order. More on this subject on request.

* * * * *

MORE ALEXANDER SHIPS?

H. F. Alexander is planning many more vessels of the "trailer-ship" type ---possibly 28---for various Pacific, Atlantic, and Atlantic-Gulf routes.

* * * * *

COASTWISE LINE EXPANDED

The Coastwise Line, San Francisco, has applied to the Interstate Commerce Commission for authorization to buy the operating rights of the Burns Steamship Company, Los Angeles.

* * * * *

GREAT INTEREST IN HARBOR RADAR

Many world ports are announcing plans for harbor radar installations. Now in process are San Francisco, Los Angeles and Rotterdam, Holland.

* * * * *

STABILISERS FOR PACIFIC COAST STEAMSHIP COMPANY?

H. F. Alexander's Pacific Coast Steamship Company may install the Denny-Brown Stabiliser described elsewhere in this issue.

* * * * *

RADAR ON FERRIES

Three new 3,000-passenger ferries in New York Harbor and one new ferry on the Delaware River are installing Westinghouse radar.

"Tasco" Wins Honors In San Pedro-Honolulu Race

In the 1949 San Pedro to Honolulu sailboat race, sponsored by Transpacific Yacht Club, Tom Short's yawl, *Tasco,* won honors as third place winner in Class B. The *Tasco* was the winner in the San Francisco-San Pedro race in 1947, and first to finish in the San Francisco-San Pedro race in 1949.

The wind was a formidable foe in the 1949 race. The *Tasco* blew out four spinnakers and one genoa jib, and broke two spinnaker poles. The force of the wind in the spinnaker bent a ⅞" monel bolt in the mast at the spinnaker head.

Elapsed time for the race was just short of thirteen days and the first four boats to finish broke a record held since 1923. *Tasco* made the run to Diamond Head in 12 days and 13 hours, the fourteenth to finish.

Built by Lester Stone of Alameda in 1947 from the design of Sparkman and Stephens, the *Tasco* dimensions are 49'-11"x11'-2"x7'-8". The hull is of double planked mahogany. The planks are tightly fitted, eliminating the need of caulking and resulting in a completely waterproof hull. The yawl has monel and bronze-fastened stainless steel rigging. Navigating gear includes Loran radio telephone and radio receiver.

Official Photograph, U. S. Navy

The "Tasco" under way

Profile view of the "Tasco"

Equipment below decks includes built-in stainless steel refrigerator which can be used as a chill box or deep freeze unit. The galley is all of stainless steel. The stove and table are on gimbals which allow them to be used on the roughest seas. The cabin sleeps four and the owners' stateroom, two. The forecastle is used for sail stowage.

Powered by 40 HP Universal marine engine, top speed of the *Tasco* under power is 9 knots. She recently had a tiller installed to replace a wheel.

The crew for the 1949 race consisted of Skipper Tom Short; Mrs. Short, who was official photographer; their daughter, Geraldine; and son, Preston; Wayne Lippert, navigator; P. J. Van Nostrand; Bud George; and W. A. McKenzie, who sailed the boat back. On a previous Honolulu race she was shipped on a Matson freighter.

A color film of this race was presented at the January Mariner's Club meeting in San Francisco, with a talk by Tom Short, who is president of the marine equipment firm, T. A. Short Company, 245 Fremont Street, San Francisco, and a former president of the Club.

Women's Organization

The Women's Organization for the American Merchant Marine is serving the maritime industry in San Francisco in many ways. Made up of members of shipping families or those with an active interest in shipping, the ladies know the problems of the industry and give such problems their enthusiastic attention.

At Christmas time a large number of members, under the leadership of President Mrs. Alfred Pittman, gathered at the Marine Hospital where they took over the tasks of providing entertainment and gift distribution to a group of merchant marine patients. The affair was so successful that it will be made an annual project.

WOMEN'S ORGANIZATION MEMBERS AT MARINE HOSPITAL

Top, left to right: Mrs. Alfred Pittman, Harry Drosis (patient), Mrs. Paul Rogers, Mrs. Frances Waters, Mrs. John M. Van Orden. Bottom, left to right: Mrs. John M. Van Orden, John Lafferty, marine engineer (patient), Mrs. Oscar Beyfuss, Mrs. Alfred Pittman, Mrs. Jack Harris, Mrs. Paul Rogers, Port Chaplain Ragnar Kjeldahl.

Agents for PFEL'S Mediterranean and Middle East Service

Agents for Pacific Far East Line's Mediterranean and Middle East service have been announced by John R. Wagner, Vice President and general manager.

American Export Lines, Inc., were named general agents for the Mediterranean area. American Export maintains three district offices at Marseilles, France; Piraeus, Greece; Alexandria, Egypt. These district offices report to American Export's European headquarters at Genoa, Italy.

M. Dizengoff & Company are general agents for Israel, with offices at Haifa, Jaffa, and Tel-Aviv.

American Eastern Trading & Shipping Company are the General agents for Syria, with main offices at Beirut.

Louis Dreyfus & Company, Paris, France, will act as agents for Europe generally.

Pacific Far East Line's Mediterranean service was inaugurated in the Fall of 1949 on a monthly frequency sailing.

Republic Holds General Sales Meeting

All salesmen of The Republic Supply Company of California gathered at the company's main office building at Los Angeles on Saturday, December 10, for a general sales meeting. Roy Johnson, Republic's vice president in charge of sales, called the sales meeting to discuss present and future sales policies. More than 80 salesmen from Republic's seventeen branch stores attended.

Sales meetings are held periodically by Republic to keep their salesmen fully informed of changing market conditions, new lines, etc. The Republic Supply Company of California is an independently owned and operated industrial distributor representing more than 200 leading manufacturers of products for the petroleum, chemical processing, marine, food, industrial, lumber, mining, construction and other western industries.

Republic Supply Company's sales meeting at Los Angeles in December.

Port Stewards' January Meeting

January luncheon meeting of Port Stewards' Association of the Pacific Coast in San Francisco. The row of 18 books was presented to bibliophile Gene Blank as a "little memento" from the Association for his services as President for 1949.

Left to right: G. R. Vernon, Al Bissel, Paul Babcock, Gil Nelson, Tom Taylor, Gene Black, Jack McCartney, Joe Jadrich, Jim Macan, Russ Trevillian, O. A. Ryder, L. A. Mirzy.

Kinney Opens New Los Angeles Office

Kinney Manufacturing Co. of Boston, Mass., announces the opening March 1 of its new Los Angeles Office at 3942 West Slauson Ave., Los Angeles 43, California. The office occupies a newly constructed building especially designed for the sales and service of Kinney Vacuum Pumps, Liquid Rotary Pumps, and Bituminous Distributors. Roy A. Woltman, well known as Kinney representative in the district, will remain in charge of the new office.

San Francisco Naval Architects' January Meeting

The January meeting of the Northern California Section of the Society of Naval Architects and Marine Engineers was held at the Engineers Club, San Francisco. A paper entitled "Problems of Electrical Distribution on Shipboard" by Frank M. Starr of General Electric Company, was presented by W. E. Jacobsen, Assistant Manager of General Electric's Federal and Marine Engineering Division.

Starr has been with General Electric since 1929 during which time he has specialized on problems of electric utility distribution systems, distribution systems on Merchant and naval vessels and more recently on shipboard switchgear and electrical systems.

At the Naval Architects' meeting. Left to right: Emmet Jones, Secretary of Northern California Section; Robert Tate; Morris Weitzner; S. A. Knapp; H. P. Stewart, Chairman of Section; William E. Jacobsen (Speaker), General Electric; Morris Guralnick; George L. Crow; Albert K. Goodman, Free Lance Consultant.

Navy Weather Central Moves to Alameda Air Station

The Navy Weather Central, which forecasts weather conditions for the entire Eastern Pacific area, has been moved from the Federal Office Building in San Francisco to Alameda Naval Air Station.

The move was made for reasons of efficiency, economy, and personnel, and will involve 26 officers and men.

The Central makes weather broadcasts twice daily and during storm conditions make four daily forecasts. The messages are received by Naval and merchant vessels from Canada to Mexico and hundreds of miles out to sea.

The activity is headed by Captain H. F. Traua, USN.

Admiral McCormick Honored

450 were present at the reception and dinner on January 24 honoring Rear Admiral and Mrs. Lynde D. McCormick, USN, upon the occasion of the relinquishment of Admiral McCormick's command of the Twelfth Naval District, San Francisco, to assume the duties of the office of the Vice Chief of Naval Operations. The affair was sponsored by the San Francisco Chamber of Commerce at the Commissioned Officers Mess of the San Francisco Naval Shipyard. A tour of the Yard followed the dinner.

At the reception and dinner.
Left: Admiral McCormick, Paul Bissinger, Chamber of Commerce President, and Mrs. McCormick.
Below: Top—Mrs. Warren, Admiral Murray, Mrs. Murray.
Bottom—Governor Warren and Admiral McCormick.

Admiral Rodgers Replaces Admiral McCormick

◀ Rear Admiral Bertram J. Rodgers, USN (right), became Commandant of the Twelfth Naval District February 1. He relieved Rear Admiral Lynde D. McCormick, USN (left) who has held the post for the past year. Admiral McCormick has been ordered to duty as Vice Chief of Naval Operations in Washington.

Official U. S. Navy Photographs

Sopac Oil Boom

The Sopac land-based seagoing equipment used in mopping up oil spills. The picture shows R. B. Murray of Java Pacific Line, H. W. Crosby, Assistant Manager of the Long Beach Sopac office, Bill Donohugh of the Donohugh towboat and barge service used in cleaning up the oil, and Bill J. Harris, Sales Manager of the Company at San Francisco. In the device shown, a reel holds a cork boom which is used to surround an oil spill to prevent its spreading. Straw is thrown on the oil and as the oil adheres to the straw, the latter is collected in specially built punts.

A 2903 Ship Record

Celebration of 25 years of service in marine installation, flooring, wall coverings and acoustical materials, was marked by Selby Battersby and Company of Philadelphia on February 13.

Now leaders in the construction field, Selby Battersby and Company started operations in February 1925 with only three officers, an office manager and a small office at 810 Noble Street, Phildelphia. They have grown to be one of the largest contractors in the country with branch offices in New York, Baltimore and Newport News, and assets totalling more than half a million dollars.

During World War II, Selby Battersby was elected to do special plastic armor work on 2,903 ships, on which they worked in 39 shipyards simultaneously. Since it started in 1925, Selby Battersby and Company has made over 12,000 installations of deck covering, a total of 12,000,000 square feet, or 276 acres, in addition to thousands of insulation jobs and special work, including plastic armor. Included were such outstanding jobs as 150,000 square feet on the *America,* and the C-1 freighter program.

Selby Battersby and Company manufactures Selbalith Magnesite Flooring, Selbakote Emulsion Flooring, Levelite Emulsion Flooring, Selbacrete Magnesite Fill, Selbatraz Terazzo Flooring and Filmix, besides handling the products of leading manufacturers in wall, ceiling and floor material fields.

Present general offices of Selby Battersby & Company, 5235-41 Whitby Avenue, Philadelphia.

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The Port of Long Beach
AMERICA'S MOST MODERN PORT ★ CALIFORNIA

New Officers of Mariners Club

New officers of the Mariners Club of California, installed at their February 1st meeting, are as follows: President — Capt. A. T. Berry; Vice-president — Fred Archbold; Secretary-Treasurer—Felix V. Billig.

Members of the Board of Governors: William Beck, Richard Dineley, Kenneth Ingraham, John Bertolani, Fletcher Monson, John Cordes, Harold Wrigley, Al Wagner, Ed Schneider, Harvey Riley, Capt. William Fisher.

John Moeller Winner in Display Contest

John Moeller, of Ets-Hokin & Galvan, was one of 27 capital prize winners in the National Westinghouse Dealer Display Contest in conjunction with their "Miss Famous" consumer contest. His winning entry was Ets-Hokin & Galvan's window display early in December.

Moeller was the only winner in California and one of three on the West Coast.

Board Meeting of Marine Association of Commerce

With newly elected President Willis Merrill presiding, the first Board of Directors meeting of the Marine Association of Commerce was held recently in Wilmington, California. Merrill, who is head of the Copra Oil & Meal Company, succeeded Harry Wade to the presidency. The Marine Association of Commerce is a civic organization for the development of marine trade, industry and seaborne traffic in the ports of Southern California. Robert Hays is executive secretary of the association, with headquarters at 119 West Anaheim Street, Wilmington. S. L. "Roy" Kuykendall was first president of the organization.

Snapped at the meeting were the following (left to right): S. L. "Roy" Kuykendall; Harold Child; Miss Chaplin, secretary of MAC; Willis Merrill; Ray S. Mitchell; Guy McCudden.

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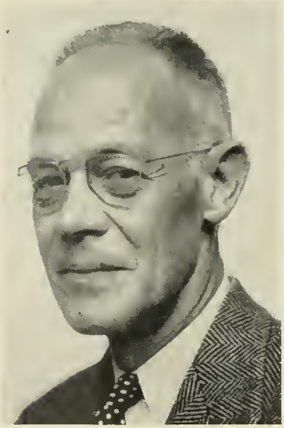
De Laval Steam Turbine Company Announces Executive Promotions

James P. Stewart, vice president and manager of Commercial Sales Division of De Laval Steam Turbine Company, has been elected exacutive vice president. He will continue as manager of the Commercial Sales Division.

Stewart came with the company in 1946 to handle the sales of its centrifugal compressors after seventeen years capital goods experience with the Elliott Company, Jeanette, Pa., and Borg-Warner Corporation, Milwaukee, where he had engineering, production, sales and executive positions.

W. A. Reynolds, manager of the IMO-De Laval Products Division, has been appointed assistant to the president. He became associated with the company in 1932 when he was made manager of the IMO Pump Division. Previously he was assistant to the vice president and general manager of the Hendy Machine Company, Torrington, Conn., and sales manager for the Dravo Corporation, Cleveland.


W. A. Reynolds

W. A. Neumann, Jr., controller of the company, has been appointed acting manager of the IMO-De Laval Products Division, but will retain the title of controller, having been appointed to that office in January, 1949. He became associated with the company in 1946 as assistant factory controller. Before that he was with the Westinghouse Electric Corporation, Pittsburgh, Pa. in accounting and administrative capacities. From 1943-1946 he was in military service.

J. P. Stewart

W. A. Neumann, Jr.

Carl F. Norberg Promoted Executive Vice President Of Exide

Carl F. Norberg has been elected executive vice president of The Electric Storage Battery Company. He was formerly vice president in charge of manufacturing since 1944.

Gordon Colberg Is Superintending Engineer for Standard Oil

Gordon W. Colberg has been appointed Superintending Engineer of the Marine Department of Standard Oil of California to succeed Barney Young who passed away December 27 after serving as Superintending Engineer for fifteen years.

Gordon W. Colberg

Colberg is a graduate of the College of Pacific where he received an A.B. degree in Engineering in 1935. He received a B.S.E. degree in Naval Architecture from the University of Michigan in 1937.

Joining Standard of California in March 1937, Colberg was a draftsman in their Marine Department and steadily advanced through variour engineering jobs in technical duties connected with the company's floating equipment. In 1946 he was elected secretary of the Northern California Section, Society of Naval Architects and Marine Engineers.

Thirty-five points are all that need be earned by Merchant Marine Naval Reserve officers before June 30, 1950 to make this a year of satisfactory Federal service. One 14 day training duty period plus a correspondence course added to the 15 free points for Naval Reserve membership will total the necessary 50 credits toward retirement under Public Law 810, Title III.

Harry Hunt Advanced by Johnson Line

Fred L. Doelker, Pacific Coast Manager of Johnson Line, has announced the appointment of Harry A. Hunt as Assistant General Freight Agent of Johnson Line.

Hunt began his association with W. R. Grace & Co., shortly after graduating from Lowell High School.

In 1930 he joined the traffic department connected with the Johnson Line. He was a Freight Traffic representative until the war stopped the service in 1940.

He holds a B. S. degree in Foreign Trade from the University of San Francisco, and is a member of the faculty in their evening division of the College of Business Administration. He is active in fraternal circles and is a member of the Pacific Traffic Association and the Commonwealth Club.

Since the post-war resumption of the Johnson Line service to the Pacific Coast, Hunt resumed his Freight Traffic representative post under Robert E. Pyke, General Freight Agent of Johnson Line, until the present change.

Millions of Dollars in
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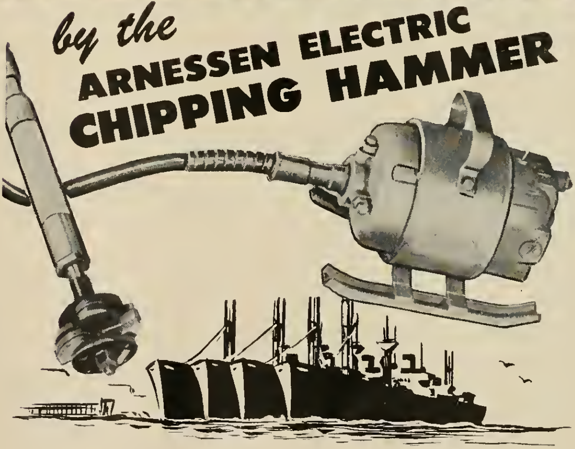

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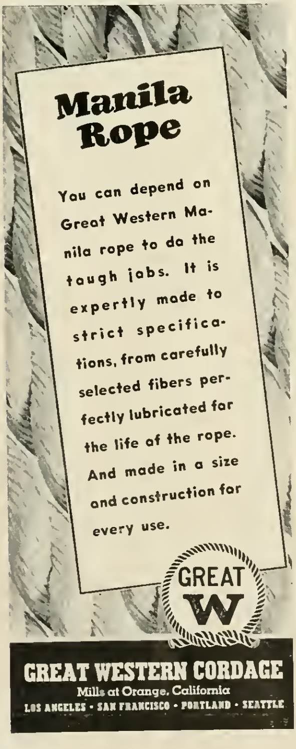

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Many Big Installations By Carrier Corp.

Contracts for the complete air conditioning of seven new fighting vessels, including four destroyers and three submarines, have been awarded Carrier Corporation. The contracts also include provisions for the complete ship stores refrigeration of the seven vessels.

Two of the air conditioned destroyers are being constructed by the Bethlehem Steel Co., Shipbuilding Division, at Quincy, Mass., and the other two by the Bath Iron Works at Bath, Me. The submarines are being built at the Portsmouth Naval Shipyards, Portsmouth, N. H.

The four destroyers' dimensions are: length, 493 feet; beam, 50 feet, with a standard displacement of 3,675 tons. All their vital and living compartments are being air conditioned.

The completely air conditioned submarines will be 262 feet long, with a beam of 27 feet and surface displacement of 1,560 tons.

Carrier previously had announced contracts for the air conditioning and refrigeration of five new luxury liners, refrigeration of an undisclosed number of tankers, and the conversion of cargo ships into refrigerated vessels.

Two of the luxury liners are for the American Export Lines, and are being constructed by Bethlehem at Quincy. These are the *Constitution* and the *Independence,* which when finished and fully fitted will represent a total investment of about $50,000,000. The ships each measure 638 feet overall, rating at 20,000 tons, and are designed to accomodate 1,000 passengers.

Other Carrier contracts announced were for three new ships to be added to the American President Line. These are the *President Jackson, President Adams* and *President Hayes.* Each vessel is equipped with special marine-type dual suction centrifugal compressors to provide for complete air conditioning of the entire vessel, as well as complete refrigeration for ships stores and cargo compartments, the latter to be suitable for 10 degrees below zero.

Conversions with refrigerating equipment include cargo vessels for the Waterman Steamship Co., Mobile, Ala., and the Grace Lines, New York.

Davis Appointed to Long Beach Board Of Harbor Commissioners

John P. Davis has been appointed to the Long Beach Board of Harbor Commissioners to fill the unexpired term of the late M. S. Walker.

Davis is a prominent Long Beach furniture dealer, past president of the Long Beach Chamber of Commerce, past president and past district governor of the Rotary Club. He is a director of Seaside Hospital and the National Retailer Furniture Dealers Association. He has been a resident of Long Beach since 1909 and is very active in American Legion affairs, having been an air corpsman in World War I.

During his regime as president of the Chamber of Commerce, 1945-46, Davis was active in harbor development work.

Follis Succeeds Collier as Standard Oil Chairman

H. D. Collier has announced his resignation as chairman of the board of directors of the Standard Oil Company of California, effective December 31, 1949. At the request of the board, however, he will continue as a director and chairman of the finance committee.

R. G. Follis, vice chairman and formerly president, was elected by the board to succeed Collier as chairman. T. S. Petersen, who was elected to the presidency on January 8, 1948, will continue in that office.

Collier, who joined Standard in 1903 as a salesman, has been a director since 1924. He became a vice president in 1931, was elected president in 1940 and board chairman in 1945. During these last ten years under Collier's leadership, Standard has reported the greatest growth in its history.

In 1939 Standard was the seventh largest producer of crude oil in the United States; now it is the third largest. It also has had an unprecedented growth geographically during these years, having extended its refining and sales operations to the East Coast and producing operations to the Rocky Mountains and the Gulf Coast.

Follis has played an increasingly important role in the company's growth. He joined the company in

1924 as a refinery engineer and has been a director since 1942. He was a vice president from 1942 to 1945, president from 1945 to 1948, and since that time, vice chairman of the board. Among other duties, he directed wartime refinery expansion and then the postwar development of research and the conversion of the company to peacetime operations. For the last two years he has been closely identified with Standard's East Coast and foreign operations, including the company's interests in the Middle East.

Phillips Promoted By Globe Wireless

W. H. Phillips, for the past four years Globe's Philippine Manager, has been promoted to the position of vice president of Globe Wireless, Ltd., with headquarters in San Francisco. He has been with the Dollar interests since 1923, when, as a young man just out of college, he became a radio operator on the ships of the Dollar Steamship Line.

Phillips served as a radio operator on various ships of the Dollar Line from 1923 until 1933, when he transferred to Globe Wireless. For the next 6 years he worked in the Globe stations at Mussel Rock (near San Francisco) and Kaena Point (near Honolulu).

In 1939 he was sent to Manila as Chief Engineer of the Globe station there. On December 31, 1941, as the fall of Corregidor appeared imminent, he had the unhappy task of standing by and watching the U. S. Army destroy all the Globe communications equipment, thus preventing it from falling into the hands of the enemy. For the next 37 months he was a prisoner of war interned at Santa Tomas Internment Camp.

After Manila was liberated he returned to the United States, arriving in San Francisco in April 1945, and was assigned to Treasure Island until his separation from service in February, 1946.

He returned to Manila in March, 1946, supervised the rebuilding of the Manila station, and put it back on the air on June 1, 1946. He was promoted to the position of Philippine manager of Globe Wireless on December 1, 1946. Since then he has extended the Globe circuit to Cebu and Formosa, and inaugurated Globe service to Hongkong, the Dutch East Indies and other Asiatic points. It is now possible to send a message any place in the world "via Globe."

Eby Industrial Sales Manager of York Corp.

William R. H. Eby, a native of Oakland, Calif. has been appointed Industrial Sales Manager of the Pacific District of York Corporation, with headquarters in Los Angeles.

Until recently Eby had been serving York Corporation as branch manager at Seattle. He has been with the air conditioning and refrigeration firm ever since 1930, following his graduation from the University of Arizona.

Following an extensive course at the York Corporation factory in York, Pa., Eby was assigned to the Los Angeles office where he remained until 1934 when he was transferred to Seattle. He was appointed Seattle branch manager in 1945.

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Biggest is not enough—it's the design that is important. Whether a barge is low in cost to build, operate, and maintain depends on the ability of the Naval architects. PACECO's Marine Department includes men who have been with the company since 1917 as well as younger men with experience throughout the United States.

Bring your marine engineering and construction problems to PACECO—a phone call to LAkehurst 2-6100 will bring a representative to your office.

Below: Barge #12 (Bay Cities Transportation Fleet) largest gasoline tanker barge ever built in the west designed and constructed by PACECO.

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Pacific Marine Review

Greger is Diesel Representative Of Lima-Hamilton

Henrik Greger has been named as Diesel engine representative for Lima-Hamilton Corporation of California, with headquarters at San Mateo. He will handle the sale of all Hamilton Diesel engines, parts, and service in the State, and will also represent Lima-Hamilton on steam engines and service to steam engines for both stationary and marine use. He will maintain headquarters at 315 25th Avenue, San Mateo, Telephone FIreside 5-0781.

Tom Short Home Again

A flying trip around America was recently completed by Thomas A. Short, president of the firm in San Francisco bearing his name. Accompanied by Mrs. Short, Tom attended the 1950 Boat Show at Grand Central Palace, New York City, where he visited the exhibits of manufactures whom he represents on the Coast . . . notably Caterpillar engines, Universal marine engines, Mercury outboard motors and the L. Q. Moffitt display for Goodrich Cutless Bearings.

Tom Short

Tom Short went through the plant of Marine Safety Equipment Co., Point Pleasant, New Jersey, as guest of John P. ("Jack") Harkrader, president. This firm is manufacturing a complete line of lifeboats and davits. Another manufacturer called upon was J. I. Wakelee, head of Sedgwick Machine Works, New York, makers of elevators for commercial vessels, naval craft, homes and hotels. From the New York region Tom flew down to visit the George Gibbs Engine Works of Jacksonville, Florida, and another inspection call was made over at Morgan City, La., at the plant of Conrad Industries, boat builders.

Oweson On West Coast

A. B. Oweson, president of Oweson, Inc. of Norway and the U. S., is back on the West Coast for the winter, visiting Oweson offices in San Pedro and San Francisco and dealers in Vancouver, Portland, Seattle and Tacoma. The Oweson Company is exclusive distributor for essential electrical parts for ships.

GM Diesel Quiz

The "GM Diesel Quiz", a new pamphlet describing the features, characteristics and application of the General Motors Diesel engine, was recently put into circulation by the Detroit Diesel Engine Division. Designed in the popular questionnaire format, the "Quiz" provides simple, easy-to-understand answers to 17 basic questions about the design and operation of GM Diesel engines. It was introduced principally as a handout piece at shows, fairs and exhibits; however, you may receive a copy by addressing your request to: Detroit Diesel Engine Division, 13400 W. Outer Drive, Detroit 28, Michigan.

William Lambie Expands at Los Angeles Harbor

William Lambie, widely known naval architect who has specialized for many years in propeller design under the name of Lambie Propeller Company, Inc., at Wilmington, Calif., recently acquired the Wilmington plant of the Doran Company at 216 East "C" Street, and will engage in the design, repair and balancing of propellers of all sizes.

As his host of friends put it . . . Lambie can make wheels "for canoes and Cunarders!"

Lambie served his apprenticeship in Clydebank, Scotland, as a hull draftsman with John Brown & Company and spent five years in their Experimental Tank making tests on hulls and propellers for all classes of vessels, and several years in their Scientific Department. Lambie was educated in Scotland in naval architecture and marine engineering.

The Lambies—father and son.
—"From canoes to Cunarders."

Lambie worked in the Hull Drawing Room at Fore River Shipyard, Quincy, Mass., for two years, and then for three years in the Drawing Room of Bath Iron Works, Bath, Maine. Later he was with Ames Shipbuilding & Drydock Company, Seattle, as Leading Draftsman, Hull Department, and with the Southwestern Shipbuilding Company, San Pedro, Calif., as Naval Architect. When the Southwestern Shipbuilding Company was sold to Bethlehem, Lambie opened his own office, specializing in propeller design, and later he sold propellers to fishing vessels under his own name. He was also the Doran Company representative in Wilmington in the sale of ship's propellers.

Lambie propellers were installed on many vessels operating on the Pacific Coast, including the *City of Los Angeles, Harvard* and *Yale, Ruth Alexander,* several Texas Oil Company tankers, the Grace Line tanker *Nora, Calawaii, City of Honolulu, Catalina, Avalon,* Wilmington Transportation Company tugs and San Pedro Towboat Company tugs. The company also installed a 5-bladed propeller on the Owen-Parks lumber schooner *Cricket.*

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LONG BEACH • 1470 West 9th St., Phone Long Beach 7-6845
GALVESTON and HOUSTON, TEXAS • Galveston Ship Supply Co.
NEW ORLEANS, LOUISIANA • Gulf Engineering Co., Inc.

Propeller Club Election

New officers of the Propeller Club, San Francisco, elected at their February 15th meeting, are as follows:

President, K. C. Tripp; 1st Vice President, George Killion; 2nd Vice President, D. N. Lillevand; 3rd Vice President, T. C. Ingersoll; Secretary-Treasurer, A. J. Pessel.

One-Year Governors: R. A. McLaren, T. C. Ingersoll, F. C. Ninnis, Jr., John Parker, G. V. Cooley.

Two-Year Governors: E. H. Harms, K. C. Tripp, George Killion, H. F. Gelhaus, Marshall Levis.

Three-Year Governors: E. F. Hoffman, Philip Lemler, J. H. Jensen, George B. Schirmer, Thomas A. Short.

K. C. Tripp

A. J. Pessel

A. J. "Bud" Pessel started with Matson in 1925 as a receiving clerk on the Matson docks, Piers 30-32. Shortly thereafter he was assigned to the Passenger Department and was made Assistant Ticket Agent at San Francisco. In 1940 he was sent to Chicago as General Agent and then to Honolulu. During the war years he served for four years as a colonel in the U. S. Army Transportation Corps at Honolulu.

In 1946 he was appointed General Agent at Los Angeles for Matson and in 1948 he was assigned to the Public Relations Department of Matson at San Francisco. He is now manager of Advertising and Promotion.

Eugene F. Hoffman

Gene has been secretary-treasurer of the Propeller Club for the past ten years and has been the spark plug and mainstay of the organization from its beginning. He has attended national conclaves of the Propeller Club, and has in its truest sense exemplified public relations for the Club as well as for the American President Lines. He is retiring now from the secretaryship but will not be missed from the meetings for he will always be there and will be expected to contribute his usual quota of stories and humor. Happy days, Gene. The entire industry thanks you.

Mariners Club Election

The 1950 officers of the Mariners Club, San Francisco, are: President—Capt. A. T. Berry, Military Transportation Service; Vice President—Fred Archbold, marine surveyor; Secretary-Treasurer—Felix V. Billig, of the Eugene V. Winter Company; Board of Governors—Harvey B. Riley, deputy collector of customs; John H. Cordes, manufacturers representative; K. W. Ingraham, personnel manager, marine division, Standard Oil Company of California.

The club meets for lunch on the first Wednesday of each month at the El Jardin Cafe.

Capt. A. T. Berry, president of Mariners Club, San Francisco

A Nice Tribute

PACIFIC FAR EAST LINE, INC.
315 CALIFORNIA STREET SAN FRANCISCO
EXBROOK 2-7605

January 25, 1950

Hyet & Struck Engineering Co.
425 Folsom Street
San Francisco, California

Gentlemen:

Subject: FLEXIBLE HANDRAIL STANCHIONS

Pacific Far East Line has on board the SS *China Bear*, which is a C2 vessel built at Wilmington, N. C., complete sets of the flexible stanchions at #4, #5 cargo hatches.

These stanchions were installed August 19, 1948, and to date we have not had any expense or repairs to these stanchions.

Prior to the date the flexible stanchions were installed, each voyage, repairs were required to the pipe rails, damage resulting from careless handling of the pontoons by stevedores.

We are pleased to say that at a later date more of these stanchions will be installed on our vessels.

Very truly yours,
PACIFIC FAR EAST LINE, INC.
V. J. BAHORICH
Supt. Engineer

Soffe of Cochrane Corp. On S. F. Visit

Pictured below is Benjamin F. Soffe, Western Sales Manager, of the Cochrane Corporation on one of his frequent visits to San Francisco. He is shown conferring with Walter Hill, Marine Manager for C. C. Moore & Co. Soffe supervises sales of Cochrane products such as deaerators, hot and cold process and zeolite softeners and water conditioning equipment of all types. He has had over thirty years experience in the water conditioning field and is available for discussion and assistance in solving water problems of all types. On this trip he attended the February meeting of the Society of Port Engineers and the February Mariners' Club luncheon.

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it's John Marvin

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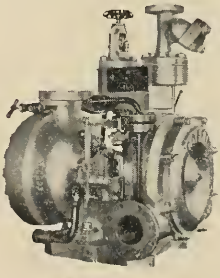
for 24 hour personalized service



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Pump Capacities to 500 GPM
Discharge Pressures to 1100 PSI
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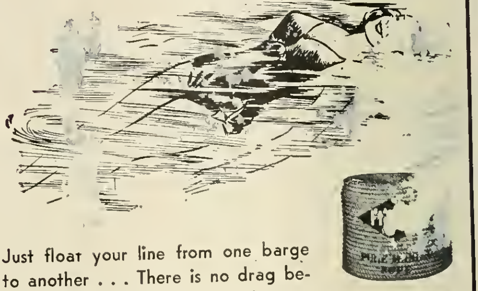

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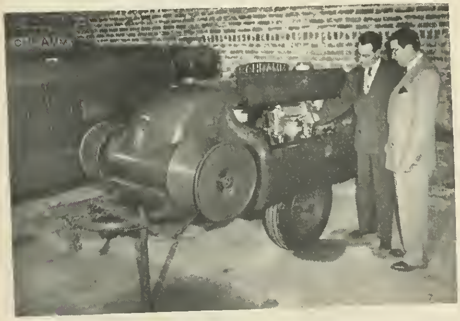
Victor's Marine Compressor Service

E. A. Daniels, Vice President in Charge of Sales, Victor Equipment Company, San Francisco, announces the appointment of Richard Labagh as Supervisor of Pneumatic Equipment Sales, for the Northern California area.

Richard E. Labagh, Supervisor, Pneumatic Equipment Sales, going over features of the Schramm unit for marine work with Vice-President in charge of Sales E. A. Daniels of Victor Equipment Company.



Victor's recently added pneumatic division is now complete in every respect, with Schramm Air Compressors and Pneumatic Tools and Cleco Pneumatic Tools. Cleco is a division of the Reed Roller Bit Company.

The pneumatic division is especially equipped to handle any sales, rental or service problem of the Pacific marine and allied industry. Schramm compressors are available in any size, stationary or portable, and are easily transported to ship-sides or marine repair shops for quick and easy use. Pictured here, the new 105 Schramm "Unistage" air compressor is but one of many models sold and/or serviced by Victor. During the past year Schramm has completely redesigned their compressor line, incorporating their new "Unistage" feature.

There is a heavy demand for pneumatic tools in the marine industry, and such tools as riveters, reamers, air drills, nut runners and sump pumps are readily available for sales and service through Victor.

Victor has manufactured gas welding and cutting equipment since 1910, and distributed electric arc welders since 1935.

Application for Membership in the Diesel Engineers International Assn.
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For carrying 6 per cent of the intercity *first class* mail, airlines in 1948 received $41,000,000, while the railroads received only $26,000,000 for carrying the other 94 per cent of first class mail, according to the Association of American Railroads.

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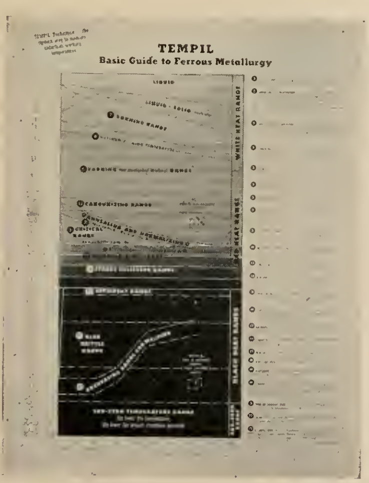
"Basic Guide to Ferrous Metallurgy"

Tempil° Corporation announces that a fourth printing of the Tempil° "Basic Guide to Ferrous Metallurgy" is now off the presses and again available.

This chart shows the working characteristics of steels in temperatures from minus 300°F to 2900°F. All the important temperature zones, including Hot-Working, Annealing, Normalizing, Stress Relieving, Carburizing and Preheating for welding are clearly defined. Temperature ranges are shown in nineteen colors approximating the characteristic hot-body radiant hues. At the right of the chart twenty-three fundamental metallurgical terms are defined and explained. A diagram symbolizing the change in grain size with temperature is shown at the left.



This handsome, plastic-laminated wall chart measures 16¼ inches wide by 21 inches long. It can be cleaned easily and will last a lifetime. It provides a handy reference source for the engineer, metallurgist and skilled worker and is available without charge to industrial executives who request it on company stationery, stating their position. Address Tempil° Corporation, 132 West 22nd Street, New York City 11.

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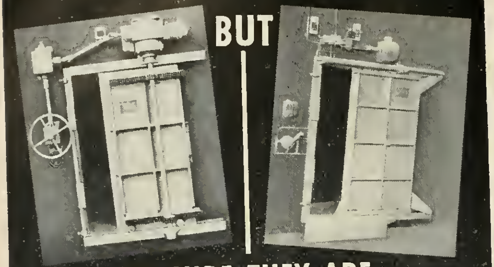

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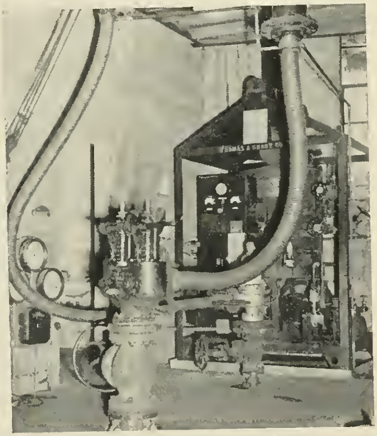

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Radiomarine Opens Hawaiian Offices

Captain George F. Shecklen, Executive vice-president of Radiomarine Corporation of America (right) has announced the opening of a sales and service agency for the Hawaiian Islands. The new facilities will be operated in arrangement with the Pacific Recording Company of Honolulu, under the management of Charles A. Allen. Captain Shecklen, en route from the islands and on a tour of the Coast, is snapped here with Pacific Region Sales Manager Harvey Butt.

Pacific American Steamship Association Elections

Albert W. Gatov was re-elected President of the Pacific American Steamship Association at the annual meeting of the group in San Francisco.

New San Francisco Vice Presidents of the Association are E. D. Flaherty, Vice President-Operations of

Albert Gatov

American President Lines and R. S. Kimberk, Vice President, Coastwise Lines. Henrietta T. Smith, San Francisco, was re-elected Association Secretary-Treasurer.

A. R. Lintner, President of the American Mail Line, was re-elected as PASSA Vice President for the Seattle-Puget Sound Area. Hillman Lueddemann, Pope and Talbot Vice President, was re-elected as Vice President of the steamship group for the Columbia River Area. Matson Navigation Company's Vice President Ralph J. Chandler was elected again as Vice President in the Los Angeles-Long Beach Area.

E. D. Flaherty

The Pacific American Steamship Association, which comprises the fourteen major American flag steamship companies operating on the Pacific Coast, also elected its Advisory Board. Serving on the Board for 1950 will be T. E. Cuffe, John E. Cushing, George Killion, A. R. Lintner, R. A. McLaren, George A. Pope and W. T. Sexton.

Henrietta Smith

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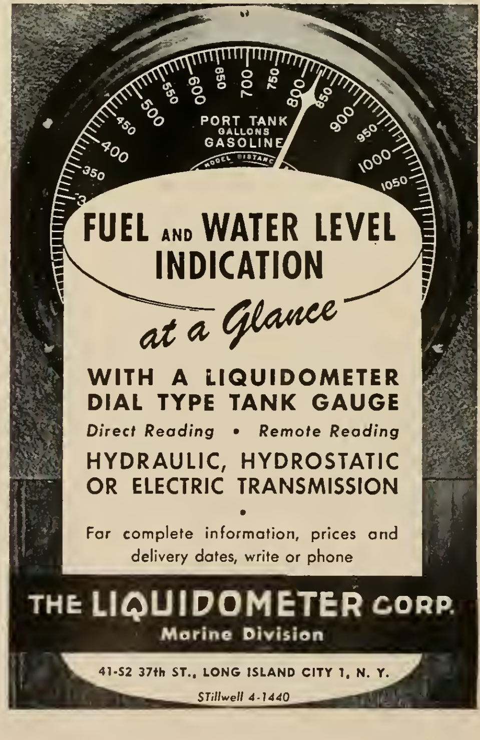

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The Captain —and Shipboard Morale

(Continued from page 71)

that captain's personal dislike or disapproval of themselves, they—not the captain—will be the losers for they will be imagining things that are not so.

When heads of department and representatives of the crew are met, the following topics are to be carefully and clearly brought out—in language which will be understandable to all.

1—The captain is sincere in his efforts to achieve complete harmony between the ship's force of management and the crew; there will never be the slightest cause for suspicion of the motives behind his every order and decision; all men will get fair treatment on his ship.

2—The heads of departments are in direct control of their departments. Any questions regarding working conditions, etc., are to be ironed out with the individual department head. Failing a satisfactory settlement of these questions, they are to be brought to the master's attention and under no circumstances are they to be kept from him; the captain has ordered his heads of department to bring to his attention all such matters as they cannot square away.

3—The crew representatives are to be challenged to prove, before the voyage ends, that the captain has dealt unfairly with them in any issues that may have arisen.

4—Crew representatives are to be on the lookout for any situation among the men they represent which will breed discord or dissatisfaction and, once these situations are recognized, to bring them to the attention of their department head, *immediately.*

5—Any complaint which cannot be squared away conclusively by the ship's best efforts is not to be harbored as a grudge but, instead, salted away for settlement by the port arbitration machinery provided for just such cases, in the home port.

6—In return for real concern and effort toward their good welfare, the captain will expect and will demand unstinting cooperation and effort from the crew as covered by their agreements with the master, the company, and by law.

7—A general or particular resume of procedure as written earlier in this article is to be divulged to the crew representatives as a preview of the manner in which the captain will operate the ship as regards personnel, *stressing the prime motive of these methods, which is high morale of all hands.*

8—An exhaustive review of all agreements between master and crew and company and crew as covered by the articles of agreement, focsle cards and agreements with the company. Evidence of all latest interpretations is to be at hand at this meeting so that these can be duly recognized by the master, heads of departments and crew representatives. (Heads of departments are to be advised in the presence of crew representatives that it is their duty to acquaint all officers in their departments of the facts of the aforementioned agreements and latest interpretations of agreements so that they may be mutually understood and used by all officers and crew together.)

9—Crew representatives are to be forcefully informed of the master's impartiality as to departments. This is to be brought out in order to foster cooperation of all crew members with each other, regardless of department.

10—Crew representatives are to be ordered to bring all differences among themselves to the attention of their respective heads of department and failing to find solution there, to the captain. This would entail a meeting of master, heads of departments and crew representatives. The captain will not tolerate an accusation of one party by another unless both parties are present.

11—Information regarding this meeting is to be published to all hands by their representatives.

Conclusion

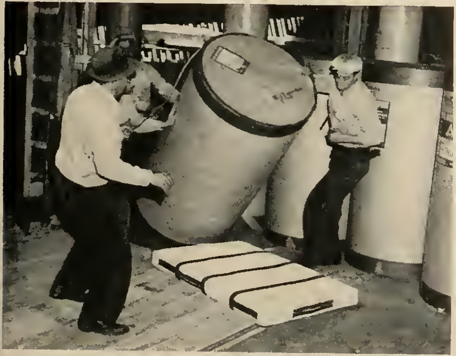
If it is believed that the discussion, suggestions and program for good morale contained in this article are involved or intricate, it is suggested that this may be because they are common sense, applied. Too often, common sense is like the proverbial forest which you can't see because of the trees. This article merely seeks to remind the skipper to let his own common sense enable him to see not only the individual personnel problems but to see these as components of a whole unit—the morale problem.

The question: Is all the time and effort recommended in this article necessary and profitable? — can best be answered by another question: Is high morale on board ship, desirable?

Crashpad

Cushioning the shock of this 1500-lb. newsprint roll as it hits the deck is the recently-developed Crashpad, a product of White & Holcombe, San Francisco. Designed primarily to facilitate the handling of large rolls of paper, the Crashpad uses foam rubber as the cushioning agent. It is covered with heavy, strap-reinforced canvas and equipped with handles for carrying or dragging into position.

Tried out by the Marine Terminals Corp. of San Francisco a number of months ago, the Crashpads have been in constant use by the California stevedoring concern over since. C. R. Redlich, manager of Marine Terminals, states that the Crashpads have practically eliminated the breaking of wrappers and distortion of rolls that usually accompanies handling this type of cargo.



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The man had just bought a cigar in a department store and started to light it.

"Didn't you notice the sign?" asked the sales girl.

"What!" exploded the customer. "You sell cigars in here but you prohibit smoking?"

The sales girl smiled sweetly: "We also sell bath towels."

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New Port of Seattle Publication Released

Publication of a new 32-page brochure titled "A Look at the Expanding Port of Seattle" has just been completed, according to an announcement by J. A. Earley, president of the Port of Seattle Commission.

The new booklet is to be distributed to shippers, foreign traders, and businessmen all over the country, Earley stated. Purpose of the publication is to acquaint prospective users of the Port of Seattle with its facilities, personnel and strategic geographical location in relation to Alaska, Hawaii, and the Far East.

The booklet includes pictures and descriptions of the Port of Seattle's facilities including its eight waterfront terminal units, Foreign Trade Zone No. 5, Salmon Bay Fishing Terminal, and the new $11 million Seattle-Tacoma International Airport.

Earley said that copies of the new Port of Seattle publication are available to interested persons and companies on request.

Ray Winquist is General Steamship's Executive Vice President

Election of R. V. Winquist as Executive Vice President and member of the Board of Directors and appointment of Hugh Middleton as Assistant to the President has been announced by Harry S. Scott, President of the General Steamship Corporation.

R. V. Winquist, elected Executive Vice President and Director of the General Steamship Corporation, Ltd.

Winquist formerly served as Vice President in charge of Traffic. He entered the shipping business in 1919 and joined General Steamship Corporation in 1926, serving in several capacities. Through extensive travel he has become well acquainted with General Steamship's various overseas connections and trades

Hugh Middleton, as Assistant to the President, assumes a position formerly held by Winquist. The son of Keith J. Middleton, former U. S. Director of Dodwell & Co., he followed his graduation from the University of Washington with practical seafaring experience in both the engine and deck departments. Thereafter he joined the Luckenbach Steamship Company in 1923, serving in Portland, Seattle and San Francisco. He moved to Los Angeles in 1929 as Manager of the Redwood Line, and in 1931 he was appointed General Freight Agent in Los Angeles for the Panama Pacific Line. In 1939 he was Manager at Los Angeles of De La Rama Steamship Company and in 1946 was promoted to the position of Pacific Coast Manager for that company, with headquarters in San Francisco.

Hugh Middleton, newly appointed Assistant to the President of General Steam-Steamship Corporation, Ltd.

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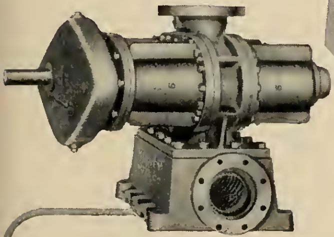

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HQAC10631	620	900	630	525	750	525	6	6
HQAC12631	460	1000	700	400	850	595	8	6
HQAC14731	375	1250	875	325	1070	749	8	8
HQAC16831	350	1800	1260	300	1500	1050	10	10
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*NOTE: Capacities in table are based on 75 lbs. working pressure for gasoline or 125 lbs. for water and kerosene. For heavier liquids the capacities shown will be delivered at reduced speeds or increase in capacities can be obtained at the speeds shown. During stripping periods, it is recommended that speeds be decreased to suit the operating conditions. With pump located so that volatile liquids are pumped under suction lift, the capacities shown are subject to reduction depending upon the amount of liquid vaporized under the operating conditions of vacuum, temperature, etc.

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Standard Oil's New Lubricants

Standard Oil Company of California launched a new series of Diesel and heavy duty gasoline engine lubricants on November 15, after two weeks of intensive indoctrination which brought 400 members of its marketing staffs together for meetings held at San Francisco, Los Angeles and Seattle.

These representatives from Alaska and the seven western states, saw and heard the inside story of Standard's new RPM DELO "family" of oils. Introduction of the new series was described as the most important improvement in performance and quality since 1935, when Standard brought out the first compounded Diesel lubes.

They heard "The Delo Story" from R. W. Goodale, Standard's lubricant division manager, and from the company's technical men who developed this new line of products to meet today's more stringent operating conditions. These were described as heavier loads, higher horsepower engines, higher operating temperatures, and more severe lubrication requirements.

The new DELO line, Standard's men were told, has been developed after three years of concentrated research and expenditure of about $3,000,000 to meet these tougher postwar conditions.

Lake Shore Units For Prototype

Lake Shore Engineering Company has been awarded an order for cargo winches, topping winches and derrick drums for the U. S. Maritime Commission "prototype" vessel being built at Ingalls yard, Pascagoula, Mississippi. M. J. Gigy & Associates are West Coast representatives for Lake Shore Engineering Company.

Traffic sign in Pennsylvania village: "Slow, No Hospital."

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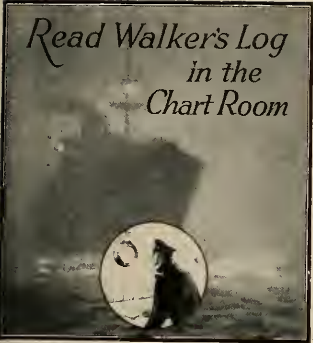

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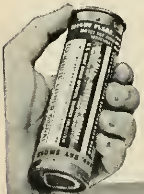

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"North Star" Conversion

(Continued from page 53)

which, under the conversion, disappeared as such and became a space for additional potable water stowage in four tanks, separate from the hull, built into the space. The additional tanks give her a fresh water capacity of seventy-six thousand gallons which is used as all-purpose fresh water. The cold storage capacity was removed to the forward end of hold No. 3. The refrigerating machinery remained in its present location and used as is, but repiped to the new hold which is used in the transportation of frozen reindeer carcasses southbound.

The two king posts and their cargo booms forward of the bridge and the king posts and booms serving No. 4 hatch disappeared in the conversion, leaving the ship with less top hamper and cleaner lined. The mainmast was rigged substantially as before, but is eight feet higher due to the construction work at the main deck. No change was made in the forward rigging or in hatches No. 1 and 2; therefore, these long hatches and the heavy lift gear forward remain for bulky freight handling.

Since the vessel has to discharge cargo and passengers at many places in the far north where no port facilities of any sort exist, she will have to be anchored off shore in open roadsteads and transfer cargo and passengers to and from the beach. The ship is therefore provided with, in addition to life boat equipment, a diesel powered towing launch with a small cabin for protection of passengers, and a steel lighter, which serves the dual purpose of landing cargo and transferring oil supplies ashore from the ship; both will be stowed in the well deck abreast of No. 2 cargo hatch. In order to make her approaches to exposed anchorages safer, the vessel was fitted with a hawse pipe in the stern, an electric windlass, chain cable, and a 2,240 pound stockless anchor. For greate safety in navigation and piloting, the vessel is fitted wit Sperry Mark II, Model O radar equipment; and radi telephone equipment, capable of communicating with al Alaska Native Service stations, was installed for greate efficiency in dispatching ship's business with these sta tions while underway.

While the plans show a relatively limited conversion since only about fifty persons beyond her crew as freighter will be carried, the same general idea in con version could be carried out for a much larger passenge list by extending the poop forward to the foremast an installing a tier or two of midship deck houses, for whic the stability is ample. Such a conversion, with the navi gating bridge moved forward, would make a hand general purpose combination cargo and passenger shi suitable for a number of trades. Plans and specificatio covering the work were prepared by Carl J. Nordstro Seattle consulting naval architect, and the work at Todd was carried out under his supervision. The basic contra price for the job was $523,437, and the total expenditu on the conversion and repairs runs to about $600,00 including Government furnished items and suppl mental contracts.

The vessel will make her first voyage to Alaska som time in March, returning again in April before maki her summer trip to Point Barrow.

Particulars of the converted vessel include:

Length Overall	338′-8⅜
Length on Designed Load Waterline	320′-
Length between Perpendiculars	320′-
Breadth, Molded	50′-
Breadth, Extreme	50′-3⅝

Depth, Molded, to Top of Main Deck Plating at Side	29′ 0¾″
Draft, Molded, to Designed Load Waterline	18′-0″
Draft to Bottom of Keel at Designed Load Waterline	18′-$\frac{21}{32}$″
Draft to Subdivision Load Line, Molded	21′-0″
Main Engine, Hamilton	Single Acting Solid Injection Diesel With Normal Rated Shaft HP of 1700 at 180 RPM
Total Fresh Water - Gallons (Potable)	67,752 Gallons 252.1 Tons
Total Fresh Water - Gallons (Non Potable)	19,720 Gallons 73.2 Tons
Total Refrigerated Cargo - Bale Cubic Feet	10,000
Total Dry Cargo - Bale Cubic Feet	216,275

Navigation Shortcuts

(Continued from page 77)

ur lines of position for a fix. In plotting, however, we nust keep in mind that due to the precession of the Equinoxes we must plot from a position 2′ East of our ssumed Longitude (in 1950) as is shown in table Two nside the front cover of H.O. 249. In the foregoing orm practical navigators will in all probability adopt ertain short cuts which will lessen the work required s well as the number of lines required for the solution f a set of star sights. As an example, one navigator I now applies the correction for H.E. mentally to the Hs before entering it on the form and as a result eliminates the two lines in the form labeled Hs and correction or H.E. Other navigators may find other methods of hortening the solution. I'm sure, however, that most racticing navigators will find this to be the shortest nd simplest of any of the forms they have yet used solve line of position problems.

Any comments or criticisms regarding this form will welcomed by the Skipper.

---

enny-Brown Ship Stabiliser

(Continued from page 63)

ould be approx. 78 tons plus loss of buoyancy of ap- ox. 17 tons or total of 95 short tons.

Details required for design purposes are given here for ference.

1. *Type of Vessel* and Service on which engaged.
2. Length B.P. and Breadth.
3. *Maximum Draught and Average Service Draught.*
4. *Maximum Speed and Average Service Speed. This is Important.*
5. *Maximum Displacement and Average Service Displacement. This is Important.*
6. The Metacentric Height, (i.e. GM) in full load and average service condition must be stated as accurately as possible. *This is Important. The Height of the Center of Gravity* above the keel is also a useful figure.
7. *The Period of Roll.* If any information regarding similar vessels on a similar service is available, such as period of roll and extent of rolling, this should be quoted.

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Pacific MARINE REVIEW

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MARINE
REVIEW

MARCH 1950

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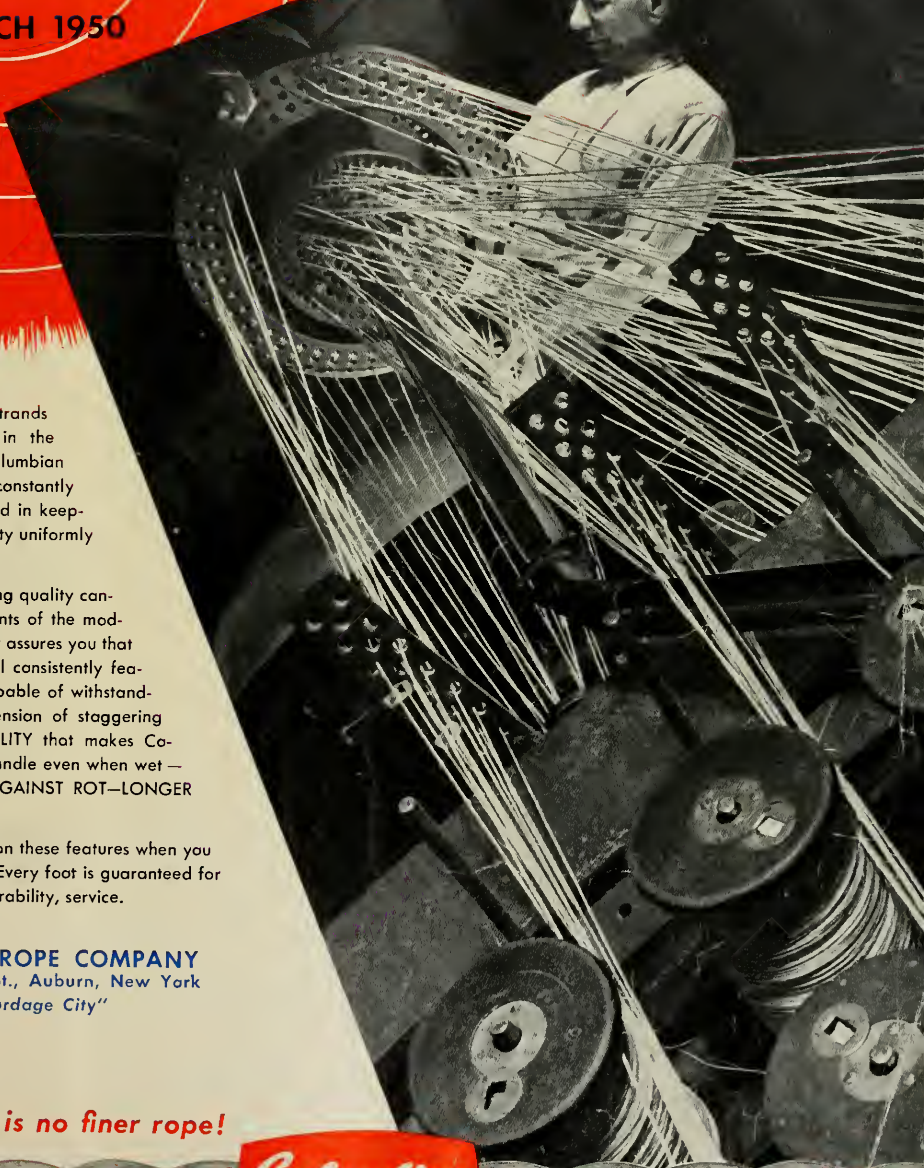

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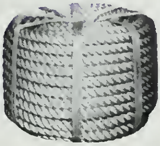

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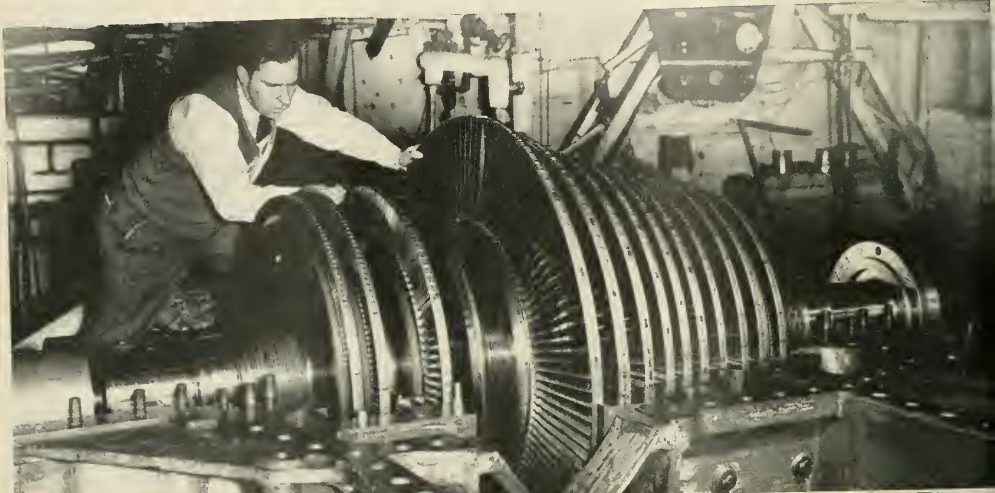
MODERN TURBINES drive SUPER-TANKERS



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Pacific Marine Review

Westward—

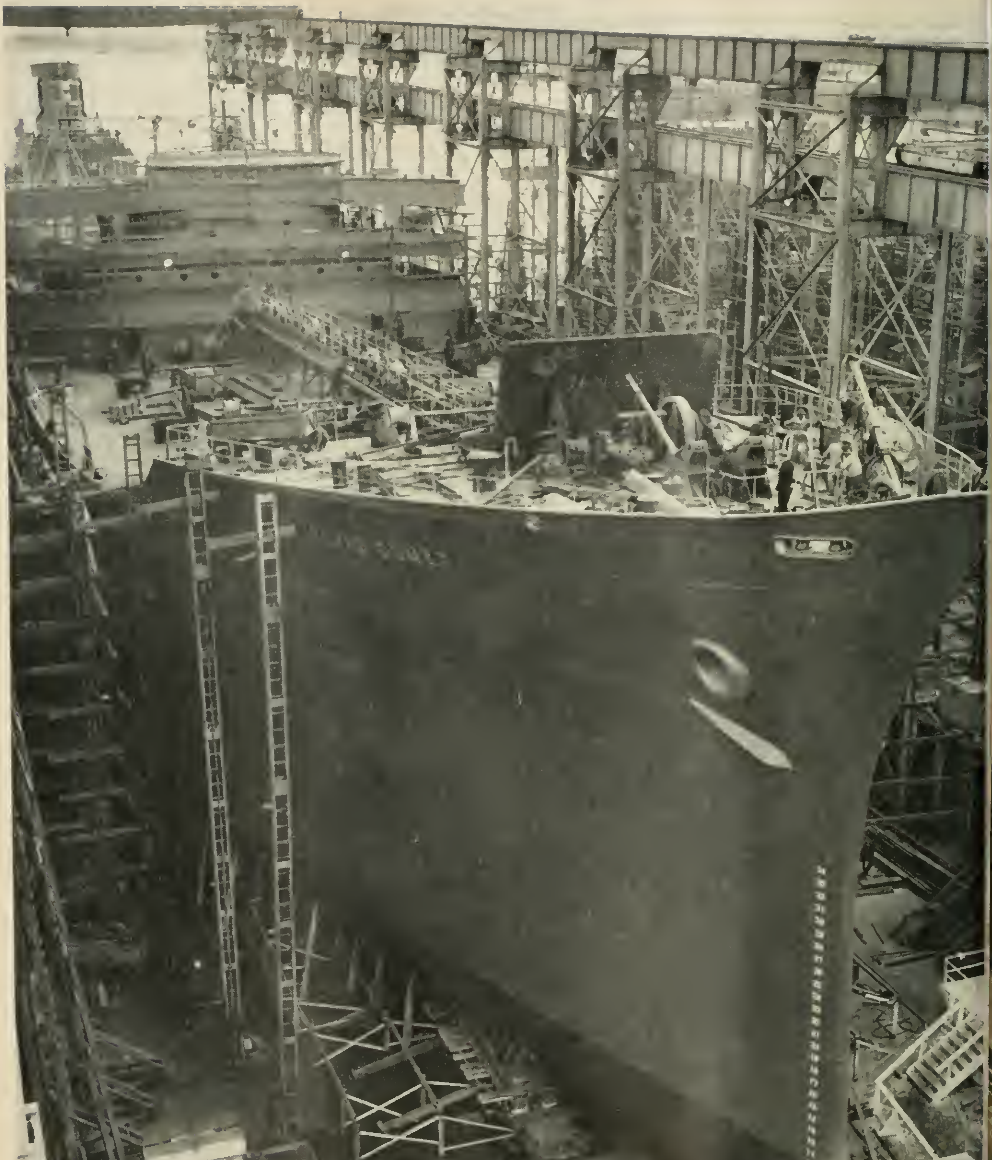
THE WEST is more than a region or a point on the compass; it is also a state of mind. It is the direction on which more and more minds seem to dwell; and, over the centuries, the direction in which progress was certain. Now the West is bursting with new industrial life.

Other parts of the country might do well to note that there is a westward trend to which they should contribute, for there are too many ways in which industrial promotion is solidly concentrated in the East. We have in mind the great governing boards of such supposedly representative groups as the U. S. Chamber of Commerce, the National Foreign Trade Council, the National Association of Manufacturers, the Transportation Association, and even some committees of Congress, which are almost wholly without Western representation. If the "National" commercial bodies cannot give adequate representation to the West—and by adequate we mean a third or more—there should be formed in the West new "national" groups that would not be dependent on the cross-country trek of two or three directors once a year to fight for the West's interests. The West is entitled to full-time, full-fledged national effort and influence. It is important to note that the West is growing, in population and industry, at a rate that may soon be independent of gratuitously tossed favors. Certain straws in the wind are being noted by the more astute in the East.

For instance, it is expected that there will be an increase of 11 in the West's representation in Congress (8 from California). These will be subtracted from the East and the East can only stand a certain amount of subtraction, with the West leading in so many dirtctions. Already the largest bank and the richest mines are in California. So are the biggest orchards, the greatest plane production, the most modern railroads, ports, ship lines, public utilities and number or automobiles. The distance from industrial Russia over the North Pole is less to central U. S. than to California and it is less by water to the Atlantic Coast than to the Pacific.

Productiveness and labor conditions are better in the West and basic industrial materials are increasingly available. In the maritime field there are signs that the industrializing of Japan, the Philippines and India may bring to the West the production of factory equipment and increasing traffic for ship lines, and there is even evidence that ship building cost differentials could be lessened in the interest of fuller employment in the yards, just as leading automobile manufacturers are finding that they can manufacture in the West. Freight saving is not their incentive, for the public pays either way. No, there is more to attract than the climate; they need the intimate contact—the *feel*—of their great and growing market. In our own field it is noted that forward-looking advertisers are recognizing Western circulation and knowledge of Western conditions in Western publications.

There is little of smugness in the West, or living off the labors of the past. The spirit is that of those who *fought* their way West, and who find their counterparts in those who are fighting now for Western trade and influence. The ECA program will end one day, and the country will value the bulwark of a region that has been growing on its efforts rather than coasting down hill.



"Sovac Comet" on the ways at Sun Shipbuilding and Dry Dock Company.

The 27,000-Ton Supertanker

—Sun Ship Completing "Sovacs"

IN JANUARY, 1948, a contract was placed by Tankers Navigation Company, Inc., with Sun Shipbuilding & Dry Dock Company for the construction of seven large tankers, to go on bare-boat charter to Socony-Vacuum Oil Company. This construction, as part of a tank ship building program which has included more than sixty-five so caller "supertankers" in United States shipyards, has constituted an invaluable contribution to our national shipbuilding activity.

The names selected for these seven tankers, the first four of which have already been delivered before the close of 1949, are as follows: *Sovac Pegasus; Sovac Aladdin; Sovac Astral; Sovac Brilliant; Sovac Comet; Sovac Daylight* and *Sovac Radiant.*

All these vessels are quite similar to the tankers contracted for at the Sun Shipyard by Standard Oil Company of New Jersey and Gulf Oil Corporation. As to major hull characteristics, horsepower, and propeller design, all these tankers are counterparts. However, in the development of the design, which was a cooperative effort of the staffs of the shipbuilder, of Robert W. Morrell, Naval Architect for the Owner, and of William B. Jupp, of Socony-Vacuum Oil Company for the charterer, a number of departures and special features were adopted for this group.

The vessels are built to highest class in American Bureau of Shipping and Lloyd's Register, and to comply with the existing regulations of U. S. Coast Guard, U. S. Public Health Service, and Panama and Suez Canal requirements.

Arrangements

Each vessel is single-screw with machinery aft and has a cruiser stern and a single continuous steel deck and a forecastle, bridge and poop erection. In the hull proper, the sequence of compartments is as follows: Fore peak, with chain locker and storerooms over; forward deep tanks for fuel oil, with dry cargo spaces over; forward pump room, with cofferdam abreast each side and above; cargo tanks Nos. 1 to 10 inclusive, port, center and starboard (all 39′-4″ in length except No. 1 which is 30′-4″ and No. 10 which is 32′-6″ long in wings and 27′-0″ long in center); cargo pump room 9′-10″ long with cofferdam abreast each side; fuel bunker tanks port, center and starboard; engine room; boiler room with "shaft alley" under and with distilled water tanks and paint locker abaft the boilers; after peak with steering gear room over; Diesel fuel tank in overhang. Double bottoms are provided under the machinery space.

Each vessel has a full bridge erection, with storage space in the bridge enclosure. The bridge deck house contains accommodations for four mates, pilot, purser, two cadets, an officers' recreation room and pantry, and a fan room. The upper bridge deck house contains the Captain's stateroom and office, radio operator's room, radio room, battery room, slop chest, linen locker and deck locker. On the navigating bridge level are the wheel room, chart room, and gyro and radar room.

On the upper deck aft, in the poop space, are crew quarters, CO_2 rooms, lockers, fresh water tanks, cold storage rooms, laundry, and cordage space. The poop deck house contains engineers' quarters, officers' mess room and pantry, petty officers' and crew mess rooms, galleys, and linen lockers. The hospital is on the boat deck aft.

Principal Characteristics

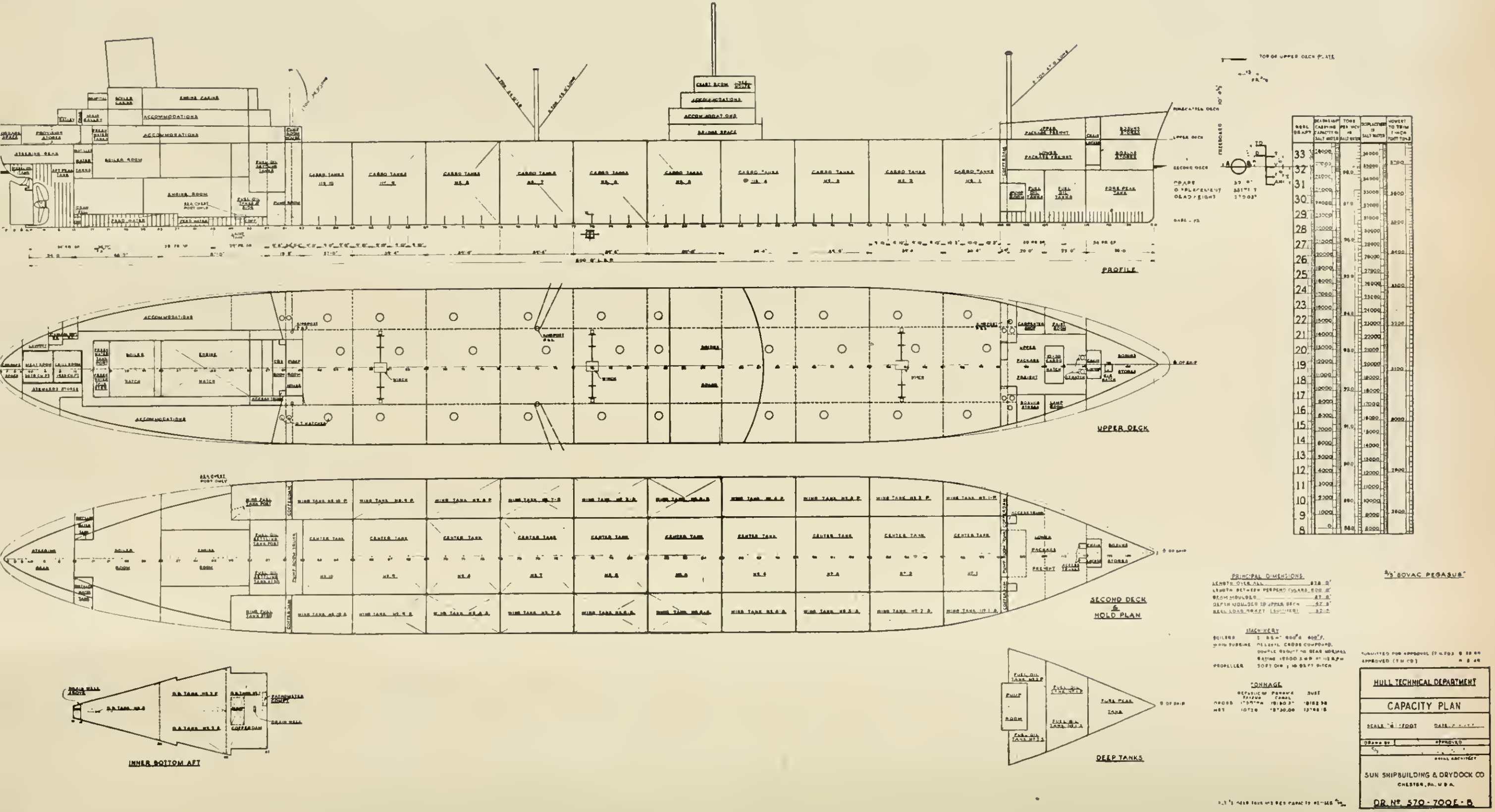
Length, over-all	628 feet
Length between perpendiculars	600 feet
Length, L.W.L. at summer draft	612.7 feet
Breadth, molded	82 feet 6 inches
Depth, molded, to upper deck at side, amidships	42 feet 6 inches
Freeboard assignment, summer	10 feet 4½ inches
Draft, summer (molded)	32 feet 2-15/16 inches
Draft, summer (keel)	32 feet 5 inches
Displacement, summer draft, molded	35,005
Displacement, summer draft, total	35,171 tons
Tons per inch, summer draft	98.25
Gross tonnage, registered	17,597.94
Net tonnage, registered	10,724.00
Deadweight tonnage	27,000.00
Under deck tonnage, registered	15,623.72
Gross tonnage, Panama Canal	18,130.37
Net tonnage, Panama Canal	13,530.06
Gross tonnage, Suez Canal	18,159.36
Net tonnage, Suez Canal	13,763.19
Cargo capacity, bbl. (100% full)	230,997.39
Bunker capacity, bbl.	18,423.48
Camber, upper deck	1 ft. 8 inches
Deadrise	None
Bilge radius	6 feet
Shaft horsepower, normal	12,500
Propeller RPM, normal (Designed)	112
Shaft horsepower, maximum	13,750
Propeller RPM at max. SHP (designed)	116
Speed (contract) on trials at 31′-5″ Md. draft	16 knots
Speed on trial (Pegasus) at normal SHP and at 31′-5″ Md. draft	16.85 knots

The deadweight carrying capacity on summer draft varies only slightly for the four vessels already completed, as follows: 27,003, 27,006, 27,010, and 27,008 tons D. W.

Hull Structure

The hull is framed longitudinally, except that the peaks, forward deep tanks, double bottoms, after portion of the machinery space, and the forecastle and poop are transversely framed. In cargo tanks Nos. 2 and 9 inclusive the spacing of transverses is 9′-10″; in No. 1 tank the spacing is 10′-2″, 10′-0″ and 10′-2″; in No. 10 it is 9′-0″. The cargo space is 377′-6″ long, which is 63.9 percent of the L.B.P. This permits of a good longitudinal distribution of the cargo.

The hull is all-welded except for the following: On



Inboard profile and capacity plan for the Sovac tankers.
Tank capacities are on the tabulated chart on the next page.

each side of the ship two deck seams, the deck stringer angle, the lower sheer strake seam, the upper and lower seams of the bilge strake, and the seam of flat keel to garboard, are riveted from the vicinity of the forward cofferdam to the vicinity of the wing bunker tanks. Angle connections of two side keelsons and one deck girder each side are also riveted to the shell and deck respectively, for about the same length as the seams.

All shell and upper deck plating ½″ thick and over is of the special chemical quality steel which, although not a requirement of American Bureau at the time the construction contract was signed, became a requirement of their revised Rules issued in 1948.

The welded seams and butts of shell and deck plating are low-temperature stress-relieved during construction.

The vessels have the usual twin longitudinal bulkheads. The main transverse and longitudinal bulkheads are of flatplate stiffened construction. The top strake of each of these is increased in thickness 0.06″ for longitudinal bulkheads and 0.18″ for transverse bulkheads over Rule requirements, and the strake below is likewise increased 0.08″ in both cases.

When the vessel is loaded to summer draft amidships in salt water, with all cargo tanks 98 per cent full of gasoline cargo of 61.2° A.P.I., with 858 tons of bunker fuel in the after tanks, with 125 tons of fresh water in after tanks, and with 75 tons of stores on board, the still water condition shows a trim by the head of about 4¼″. For a loading, in the trough of the standard wave, the estimated deck stress for sagging is 19,674 p.s.i. when loaded to summer draft, all cargo tanks filled with 63° gasoline, 610 tons of bunker fuel aft and 200 tons in No. 1 fore deep, 438 tons of fresh water aft, and 65 tons of stores, etc.

Cargo System

Each vessel has three main cargo pumps, single-stage centrifugal type, Worthington make, in the pump room, driven through a flexible coupling and gearing by Westinghouse turbines located in the engine room. Each pump has a capacity of 5800 barrels per hour against a discharge head of 125 p.s.i.g., at 1750 RPM, and a capacity of 9,100 barrels per hour against a discharge head of 75 p.s.i.g. at 1750 RPM. The turbines have a corresponding horsepower of 500 at 4540 RPM and operate on desuperheated steam at 525 p.s.i.g. and exhaust back pressure of 10 p.s.i.g. The steam to each turbine is controlled at the pump room entrance. There is no turbine governor other than an overspeed trip. Each drive-shaft is fitted with a special bulkhead stuffing-box and bearing.

The cargo tanks are segregated into three groups: Nos. 1, 2, 3, Nos. 4, 5, 6, and Nos. 7, 8, 9, 10, port, center and starboard. Each group is served by a 16″ main suction line, cross-connected in the tanks and in the pump room. Each tank has a 12″ suction branch connected to its main line.

Each main pump draws from the main suction lines and discharges to a 16″ deck line leading to the hose station amidships. These discharge lines are cross-connected, and are arranged to by-pass the pumps for filling and transferring. A 16″ drop-line is also provided for filling each group of tanks. Each main pump also draws

PACKAGE FREIGHT CAPACITY

LOCATION	V C G FEET ABOVE B.L	L.C G. FEET FORD. OF A P	CU FT.
UPPER SPACE FR. 100 - FR. 119	49.0	542.0	17,260
LOWER SPACE FR 101 - FR. 119	35.9	536.7	30,670
		TOTAL	47,930

CENTER CARGO TANKS

TANK Nº	LOCATION	VCG FEET ABOVE B.L.	L C G FEET FORD OF A P	GALLONS	BARRELS @ 42 GALS.
1	FR. 97 TO FR 100	22.0	503.4	396,995	9,452.27
2	FR. 93 TO FR 97	22.0	468.3	515,205	12,266.78
3	FR. 89 TO FR. 93	22.0	428.9	515,205	12,266.78
4	FR 85 TO FR. 89	22.0	389.6	515,205	12,266.78
5	FR 81 TO FR. 85	22.0	350.3	515,205	12,266.76
6	FR. 77 TO FR. 81	22.0	310.9	515,205	12,266.78
7	FR 73 TO FR. 77	22.0	271.6	515,205	12,266.78
8	FR 69 TO FR. 73	22.0	232.3	515,205	12,266.78
9	FR 65 TO FR 69	22.0	192.9	515,205	12,266.78
10	FR. 62 TO FR. 65	22.0	159.6	353,236	8,410.40
			TOTAL	4,871,671	115,996.91

WING CARGO TANKS

TANK Nº	LOCATION	VCG FEET ABOVE B.L.	L.C.G. FEET FORD OF A.P.	GALLONS	BARRELS @ 42 GALS.
1-P	FR. 97 TO FR 100	23.7	503.2	153,683	3167.70
1-S.	FR. 97 TO FR 100	23.7	503.2	133,883	3187.70
2-P	FR. 93 TO FR. 97	22.1	466.2	235,898	5616 63
2-S	FR. 93 TO FR 97	22.1	466.2	235,898	5616.63
3-P	FR. 89 TO FR 93	21.7	428.9	262,174	6242.24
3-S	FR 89 TO FR. 93	21.7	428 9	262,174	6242.24
4-P.	FR 85 TO FR. 89	21.7	389.6	265,775	6327.96
4-S	FR. 85 TO FR 89	21.7	389.6	265,775	6327.98
5-P	FR 81 TO FR 85	21.7	350.3	266,008	6333.51
5-S	FR 81 TO FR 85	21.7	350.3	266,008	6333.51
6-P.	FR 77 TO FR 81	21.7	310.9	266,008	6333.51
6-S	FR. 77 TO FR 81	21.7	310.9	266,008	6333.51
7-P	FR 73 TO FR. 77	21.7	271.6	266,008	6333.51
7-S	FR. 73 TO FR. 77	21.7	271.6	266,008	6333.51
8-P	FR. 69 TO FR 73	21.7	232.3	265,695	6326.07
8-S.	FR. 69 TO FR. 73	21.7	232.3	265,695	6326 07
9-P.	FR 65 TO FR 69	22.1	193.0	259,682	6182.92
9-S	FR 65 TO FR. 69	22.1	193.0	259,682	6182.92
10-P	FR. 61⅓ TO FR. 65	23.2	157.8	193,879	4616.17
10-S	FR. 61⅓ TO FR 65	23.2	157.8	195,879	4616.17
			TOTAL	4,830,020	115,000.48
			GRAND TOTAL OF CARGO TANKS	9,701,891	230,997.39

FUEL OIL TANKS

TANK	LOCATION	V.C.G FEET ABOVE B.L.	L.C.G. FEET FORD. OF A.P.	GALLONS	BARRELS @ 42 GAL'S.
WING TANK	FR. 49 TO FR 61 P.	26.0	123.7	130,216	3100.42
WING TANK	FR. 49 TO FR. 61 S	25.7	123.6	132,040	3143.82
SETTLING TANK	FR 53 TO FR 61 P	31.0	127.6	75,222	1791.00
SETTLING TANK	FR. 53 TO FR 61 S.	31.0	127.6	75,222	1791.00
DEEP TANK Nº 1	FR 109 TO FR. 119 P	14.9	552.4	83,043	1977.21
DEEP TANK Nº 1	FR. 109 TO FR. 119 S	14.9	552.4	83,043	1977.21
DEEP TANK Nº 2	FR. 101 TO FR. 109 P	15.4	532.2	91,967	2189.70
DEEP TANK Nº 2	FR. 101 TO FR. 109 S	15.4	532.2	91,967	2189.70
			TOTAL FUEL	762,722	18,160.06

DIESEL OIL TANK

TANK	LOCATION	V.C.G. FEET ABOVE B.L	L.C G FEET AFT OF A.P.	GALLONS	BARRELS @ 42 GAL'S.
AFT PEAK (TRANSOM)	FR. 1 TO STERN	31.3	4.3	4781	113.84

FRESH WATER TANKS

FEED WATER

TANK	LOCATION	V.C.G. FEET ABOVE B.L.	L.C.G. FEET FOR'D. OF A P.	TONS F.W 1 TON = 35.95 CU. FT.
DISTILLED WATER P	FR. 12 TO FR 17	36.9	30.0	47.40
DISTILLED WATER S.	FR. 12 TO FR. 17	37.0	29.75	48.20
DOUBLE BOTTOM Nº. 2 P.	FR. 33 TO FR. 48	3.0	89.25	94.49
DOUBLE BOTTOM Nº. 2 S.	FR 33 TO FR 48	3.0	89.25	94.49
DOUBLE BOTTOM Nº. 3	FR 14 TO FR. 33	3.8	52.9	118.72
			TOTAL FEED WATER	403.30
DRINKING WATER				
UPPER DECK	FR. 17 TO FR. 21 P.	49.2	38.3	35.60
UPPER DECK	FR. 17 TO FR. 21 S.	49.2	38.3	35.58
			TOTAL DRINKING WATER	71.18

BALLAST TANKS AND COFFERDAMS

TANK	LOCATION	V C.G FEET ABOVE B.L	L.C.G FEET FOR'D OF A.P.	TONS S.W. 1 TON = 35 CU. FT.
FORE PEAK	FR. 119 TO STEM	15.34	576.0	413.91
COFFERDAM P. & S.	FR. 100 TO FR. 101	21.50	520.0	169.30
COFFERDAM PORT	FR. 61 TO FR. 61⅓	24.00	139.0	70.75
COFFERDAM STB'D.	FR. 61 TO FR. 61⅓	24.00	139.0	70.76
DOUBLE BOTTOM Nº. 1	FR 48 TO FR 57	2.92	119.1	96.32
COFFERDAM	FR. 12 TO FR. 14	3.00	26.0	2.11
AFT PEAK TANK	FR. 1 TO FR 12	25.97	16.4	155.89

from port and starboard sea suctions. There is also a 12″ stern discharge line. The separation of the piping for the three groups of tanks is accomplished by means of Hamer pipe blinds as well as by the necessary valves.

Each vessel has three stripping pumps, of the rotary type, with reduction gear, National Transit make, in the pump room, driven by General Electric Co. D. C. motors of 75 H. P. each, located in the engine room. Each pump has a capacity of 500 G.P.M. against a discharge head of 125 p.s.i.g., at 300 R.P.M. The motors have controls located in the CO_2 room, with extension rods for operation from the pump room entrance.

Each stripping pump draws from the main suction manifold in the pump room, and from the casing of its main cargo pump. The main suction lines have 3″ stripper suction branches, one in each tank. There is also an independent 6″ stripper line serving the after group of tanks (Nos. 7, 8, 9, 10), with 3″ suction branches for these tanks, port, center and starboard.

Each stripping pump discharges to a 4″ deck line connecting into its corresponding main line near the hose station.

There is a pump room bilge pump, rotary type, National Transit make, driven by a G. E. Co D. C. motor of 7½ H. P. in the engine room. The pump has a capacity of 200 G.P.M. against 40 p.s.i.g. discharge head at 420 R.P.M. This pump draws from the pump room bilges and the after cofferdam port and starboard, and discharges to deck and overboard. Its control is arranged similarly to those of the stripping pumps.

The cargo tanks are provided with heating coils of 1½″ extra heavy pipe, at 125 cubic feet of cargo per square foot of heating coil. The coils are supplied with steam at 150 p.s.i.g. through a separate 6″ deck line. The returns lead through a 3″ main on deck to an inspection tank (separate from the one for fuel oil), thence to the atmospheric drain tank and to the engine room bilges.

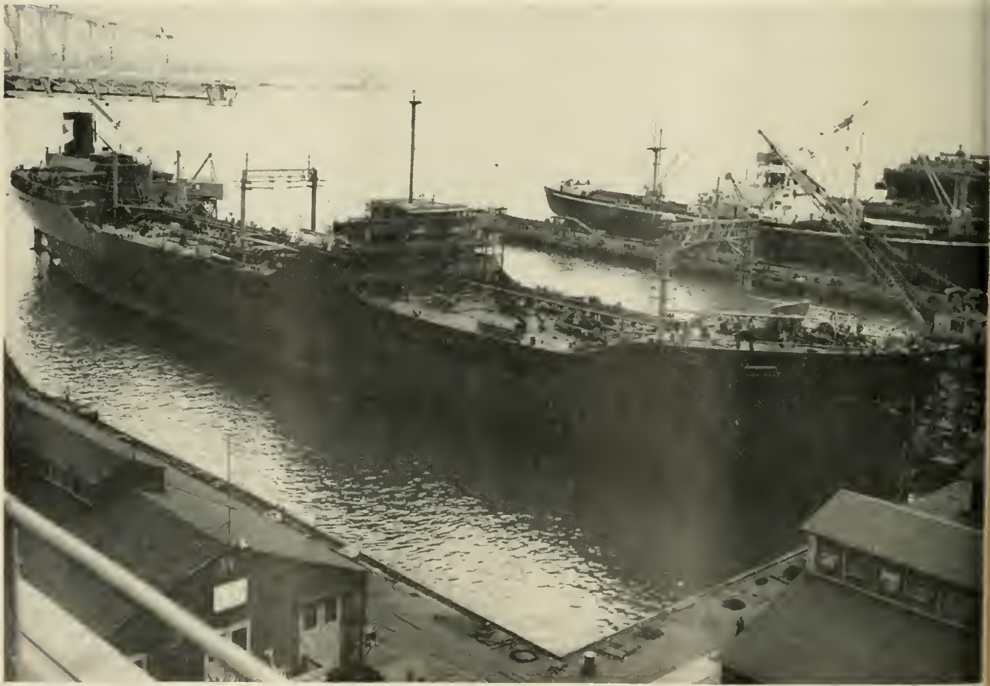
The cargo pump room is mechanically ventilated by means of two fans, one drawing air through the port king-post and one fan discharging air through the starboard king-post.

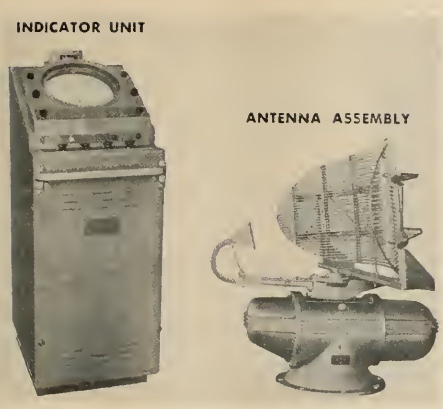
The cargo tanks are ventilated by a 6″ pipe from each tank leading through a Vac-Rel valve to 8″ and 10″ headers at the catwalk, thence up the king-posts. Each group of tanks has a separate vent system.

Deck Gear

There are two king-posts on the forecastle, each with a 5 ton boom serving the forward dry cargo hatch. Two king-posts amidships are fitted with two booms each for handling cargo hose. Two king-posts are also pro-

"Sovac Aladdin" in outfitting dock at Sun Ship.





The indicator unit and antenna assembly for Radiomarine Model CR-101-A shipboard radar installed on the Sovac tankers.

vided at the poop front, each with one boom. All booms are steel.

The only mast is a radar mast on top of the midship house.

The windlass and winches are steam-driven. The windlass is American Engineering Company make, with two cylinders 12″ x 14″, suitable for handling the two bower anchors (15,530 pounds each, stockless), and the $2\frac{11}{16}''$ chain. The spare bower anchor is stowed in the forward hold. There are five winches: one each on the forecastle deck, on the upper deck forward, on the upper deck at midship king-posts, on upper deck at after king-posts, and on the poop deck. They are American Hoist and Derrick Co. make, 9″ x 12″, 2-cylinder.

The steering gear is hydro-electric, American Engineering Co. make, with single opposed rams, Rapson slide, and dual power units (50 H. P. motors) driving Hale-Shaw pumps. The telemotor system is hydraulic. The auxiliary steering gear consists of hand wheels actuating a Hale-Shaw pump and emergency rams.

Accommodations

Each officer has his own stateroom. The two cadets are berthed together. The Captain, first officer, second officer, radio operator, pilot, and chief and first and second engineers each has a private bath. The other officers share baths between adjoining rooms.

In the officers' quarters, the joiner bulkheads are of Marinite, with marine veneer. Marine sheathing is used overhead and on the sides as required. The usual heat insulation is provided. Hopeman Brothers was the joiner sub-contractor on these vessels. The decking is Selbalith. Metal furniture is used, and the accommodations are fire proof throughout with separate exhaust ventilation.

Mechanical ventilation is provided for the quarters, in combination with heating, except that the toilets have steam radiators.

Equipment

Each vessel is equipped with Radiomarine radar, Mackay radio and radio direction finder, and Sperry gyrocompass and automatic steering.

There are four metal lifeboats, each 24′ x 8′ x 3.75′, of 40 person capacity, made by Marine Safety Equipment Corp. Two are oar-propelled and two are motor-propelled with 25 HP Universal engines. The davits and chock fittings are also of Maseco make.

Each ship has a spare propeller (bronze). On the first two vessels this is stowed in the forward dry cargo hold and on the subsequent vessels it is stowed on the upper deck just abaft the midship house, starboard.

Each ship also has a spare tailshaft, stowed in the "shaft alley", port side. A portable (riveted) section is provided in the hull to get the tailshaft out and in while on dry dock.

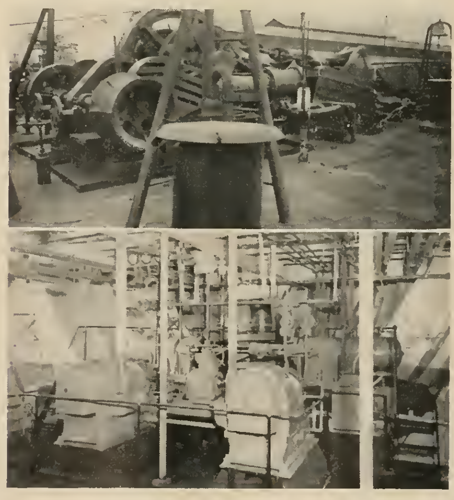
The weights of spare propeller and tailshaft (21.17 and 16 tons respectively) are included in the weight of light ship of these vessels, in determining their deadweight.

Awnings (single) are provided over the navigating bridge deck (except bridge wings), upper bridge deck, boat deck aft and poop deck aft.

The equipment tonnage is 16,704 and the ABS Equipment Number is C-49.

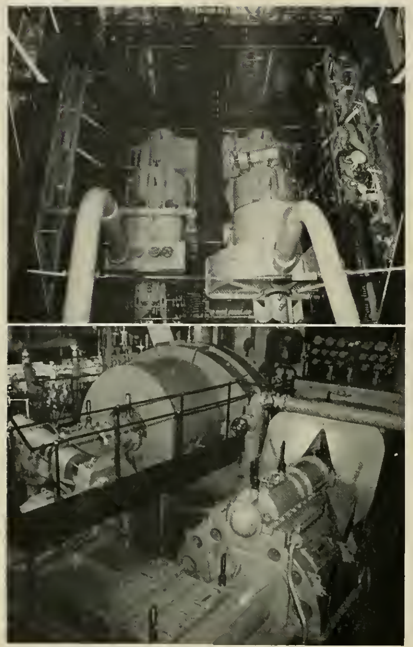
Main Propulsion Unit

The main propelling machinery, built by DeLaval Steam Turbine Company, consists of cross-compound steam turbines and double reduction gears, driving the single-screw shaft. It was designed for 12,500 normal



Top: The American Engineering Company spur geared steam windlass is capable of handling two 15,500 lb. anchors and $2\frac{11}{16}''$ dielock or Naco chain. Warping heads are on the intermediate shaft.

Bottom: The American Engineering Company steering gear is of the electro-hydraulic single opposed ram type with auxiliary hand gear. Valving is arranged so that both power units can be used for extra fast steering when desired, with control from the pilot house by means of telemotor or Sperry Gyro-Pilot.



Views of 12,500 shp De Laval geared turbine-driven main propulsion units on Socony-Vacuum tanker, "Sovac Aladdin," showing high and low pressure turbines, turning gear and instrument panel.

SHP at 112 propeller RPM at contract draft, and 13,750 maximum continuous SHP at 115.7 RPM, with steam at 585 p.s.i.g. and 790°F. at the H.P. steam chest and 28.5 inches Hg. vacuum, for both conditions, while bleeding 10,000 pounds of steam per hour from the cross-over pipe at about 50 p.s.i.a.

The high-pressure turbine, impulse type, runs at 5,644 RPM normal and has ten stages. The low-pressure turbine, single flow impulse type, runs at 3,584 RPM normal and has eight stages, and is combined with a two-stage high-pressure astern element to develop 80 per cent of normal ahead torque at 50 per cent of normal ahead RPM, with a steam flow not greater than that required for normal ahead operation.

Normally the high-pressure ahead turbine exhausts to the low-pressure ahead turbine which in turn exhausts to the main condenser. However, emergency connections are provided so that either turbine can be operated alone on high-pressure steam, exhausting to the main condenser.

The high-pressure steam chest is provided with 12 fixed nozzles and 3 hand valves which control 2, 4, and 8 nozzles respectively. The normal SHP condition calls for 20 nozzles open. The ahead, astern, guardian, and governing valves are of Schutte and Koerting Company make, turbine shaft and stage packings are of labyrinth type.

The reduction gearing is double helical.

Flexible couplings of the enclosed, all-metal, gear type are provided between the turbines and their high-speed pinions. The turbine thrust bearings and the propeller thrust bearings are of Kingsbury make. The turning gear is driven by a G.E. motor, D.C., of 10 H.P., with drum control. The lubricating oil system is of the gravity type.

In addition to the normal running-in and shop tests, the main propulsion assembly was given a thorough calibration test at Trenton.

The propeller shaft is $22\frac{1}{32}''$ in diameter, fitted with a continuous liner 24¾" in diameter at stern bearing, which is lined with lignum vitae.

The propellers are furnished by American Manganese Bronze Company. Each is solid 4-bladed, 20'-0" diameter, 16'-10" pitch.

Boilers

Each vessel has two boilers, of Babcock and Wilcox Company make, two drum type, each with an economizer, superheater, and internal desuperheater. (There is no external desuperheater). They are set side by side on a boiler flat in the after part of the machinery space, with the firing aisles forward, and passage between boilers to the after boiler room. The furnace sidewall, roof, and rear wall are water cooled. Single casing is used throughout except for the furnace front wall, which is double cased.

Each boiler is designed for a normal evaporative rate of 52,500 pounds of steam per hour, with a superheater outlet pressure of 600 p.s.i.g. and temperature of 800° F., for a guaranteed efficiency of 87.5%. The temperature of feed water to economizer is 240°F. The designed overload evaporative rate is 78,750 pounds of steam per hour with a steam temperature of 825°F. Inasmuch as the estimated steaming requirements for all purposes at 12,500 SHP for normal sea conditions is 101,992 pounds per hour, the boiler capacity has considerable margin.

Each boiler has four oil burners, and the vessels are equipped with both mechanical (Iowa) and steam atomizing burners (Y-Jet wide range), both of B. & W. make, which can be used interchangeably.

The heating surface per boiler consists of 7,390 square feet for the boiler proper, 950 for the superheater, and 2,040 for the economizer; total 20,760 square feet for both boilers. The furnace volume per boiler is 1,100 cubic feet.

Each vessel has two forced draft blower units, each consisting of a Sturtevant fan in the boiler room, rated at 27,945 C.F.M. against 15" static pressure at 1,750 RPM, driven by a 100 H.P. motor, D.C., of G.E. make, located in the engine room. The fans are cross-connected so that either fan alone can serve either or both boilers. The total draft loss, or air pressure at burner fronts, is about 5" water.

The combustion control is of General Regulator Company make, electrically operated, and the feed water control is Swartwout. There is no air requirement for sea steaming conditions. The boilers have Bi-Color gauge glasses in the fire room and Yarway remote-reading water level gauges at the boiler room entrance door, visible from the operating platform. A similar gauge for deaerator water level is located with them. The soot-blowers are of Vulcan make, steam operated.

Condensers

Main and auxiliary condensers are of Ingersoll-Rand make, two-pass type. The main condenser is a square section with reheat hotwell and is located athwartships directly under the L.P. turbine. It is designed to maintain a vacuum of 28½″ Hg. when condensing 92,000 pounds per hour of steam with 15,200 G.P.M. cooling water at 80°F. with 85% tube cleanliness and velocity of cooling water not exceeding 6 feet per second. The cooling surface is 15,600 square feet. The shell is of welded construction, using copper bearing steel plates. The tube sheets are of Muntz metal and the tubes (Phelps-Dodge) are ¾″ O.D., No. 16 B.W.O., 70-30 cupro-nickel, expanded both ends.

The main circulator is a vertical unit located in the port forward corner of the engine room. It consists of a Worthington single-stage centrigulgal pump rated at 18,000 G.P.M. against 25-foot head at 660 RPM, gear-driven by a Whiton turbine of 150 H.P. and 3,600 RPM, taking desuperheated steam at 580 p.s.i.g. and exhausting at 10 p.s.i.g back pressure. The pump draws from high and low sea suctions and bilge suction.

The main condensate pumps are in duplicate, Worthington vertical centrifugal, each rated at 230 GPM against 170-foot head at 1,750 RPM, driven by a 20 HP motor, DC, 1750/1150 RPM.

The auxiliary condenser has 3,870 square feet of heating surface. It is of pear-shaped section and is located on the port side. It is designed to maintain a vacuum of 26″ Hg. when condensing 52,000 pounds per hour of steam with 4,000 GPM cooling water at 85% tube cleanliness and 6 feet per second velocity of cooling water. Tubes are American Brass. Otherwise, the construction is as described for the main condenser.

The auxiliary circulating pump is Worthington single-stage vertical centrifugal, rated at 6,500 GPM against 15-foot head and 4,400 GPM against 25-foot head, at 720 RPM. It is direct-driven by a G.E. motor, DC, 40 HP, 720/540 RPM. It discharges to the main condenser as well.

The auxiliary condensate pump is Worthington vertical centrifugal, rated at 100 GPM against 170-foot head at 1750 RPM, driven by a motor duplicating those for the main condensate pumps.

The main and auxiliary air ejectors, two each, are Ingersoll-Rand make, multi-stage, with combined intermediate and after condensers.

Generators

The first two vessels have Crocker-Wheeler main generators driven by Worthington-Moore turbines. The other five vessels have Westinghouse units. Each vessel has two main generators. Each generator is 300 KW, 240 volt D.C., two wire, compound (stabilized shunt) wound, 1,200 RPM. Each generator is driven through single reduction gearing by a multi-stage turbine at 6,097 RPM for the Worthington-Moore and 5,930 for the Westinghouse, taking steam at 585 p.s.i.g. and 790° F. and exhausting to 25¼″ vacuum. The generators have a temperature rating of 40° C. rise at continuous normal load and 55° C. at 25% overload for 2 hours, in 50° C. ambient. They are arranged for parallel operation.

The actual generator load for sea steaming at normal power averaged 193 KW (maximum 204) on the endurance runs of the sea trials.

Each ship has a General Motors diesel-driven generating set. The generator is Delco make, 75 KW, 240 volts D.C., 2-wire, stabilized shunt wound, good for 25% overload for 2 hours. It is driven through a flexible coupling by a 100 HP 6-cylinder, two-cycle, single-acting, mechanical-injection diesel engine 4¼″ x 5″, 1800 normal RPM.

There are two 40 KW motor-generator sets for the lighting system, each driven by a 230 volt D.C. motor and delivering 120 volts D.C. Also two A.C. motor-gener-

(Continued from page 67)

"Sovac Aladdin" on trial run.

Greasing the Skids

In addition to the base coat, a slip coat, Gargoyle Grease AA No. 4, is applied to the ways between 24 and 48 hours before ship is launched. If it is applied too long before launching, the grease will harden, Socony-Vacuum Oil Co. warns.

A base coat launching grease that is the result of years of research and experiment has been developed by Socony-Vacuum Oil Company, Inc., and has already been proved successful in sending new 28,000-ton tankers down the ways.

Approximately 20 days before the launching, Gargoyle Marine Base Coat, the grease that carries the ship's load, is melted and poured on the ways about ⅜ inch thick and ironed smooth. Wood strips, called ribands, at the edges of the ground ways form guides for the sliding ways and prevent the grease from running off.

In addition to the base coat, a slip coat, Gargoyle Grease AA No. 4, is applied ⅜ inch thick 24 to 48 hours before launching time. If applied too long before launching, the grease will harden. Grease irons are pitched 20 feet apart to assure uniform thickness of the slip coat. The grease irons, together with grease covering strips, are removed just prior to launching.

After the slip coat is applied, the sliding ways are pulled under the ship and wedges, cribbing and shoring are removed, permitting the sliding ways under the ship to rest on the grease-covered ground ways for launching.

Base coat and slip coat greases are used here in a launchin of one of Socony-Vacuum's new tankers. Picture was taken as vessel was three-quarters water borne.

Ways after ship has been launched using Gargoyle Marine Base Coat and Gargoyle Grease AA No. 4 Slipcoat.

Socony-Vacuum, through its research, manufacturing and technical departments, has spent much time and effort in developing this launching grease because the launching of a ship is an operation of extreme importance and potential danger. Launching consists primarily in transferring the vessel's weight from the keel blocks, shore and cribbing, which have supported it during construction, to the launching cradle and then allowing the ship and cradle to slide down the ground ways from the building slip into the water. Unless the calculations and

(Please turn to page 93)

M. S. Mui Ann

G. M. Equipped Motorship Built in Norway for Orient Service

ANOTHER PAGE was written in the glamorous history of trade in the Orient when the new motorship, *Mui Ann,* dropped anchor in the harbor of Singapore. Junks and sampans, which were a mode of transportation of both cargo and passengers long before the time of Columbus, witnessed the coming into Far East service of the newest and one of the finest types of ships yet to be built. In Singapore, after coming from Norway, where she was built, via Denmark, with a load of sugar for Beirut and then to Port Said where she took on a load of salt for the Far East, was the GM Diesel-Electric propelled ship—the *Mui Ann.*

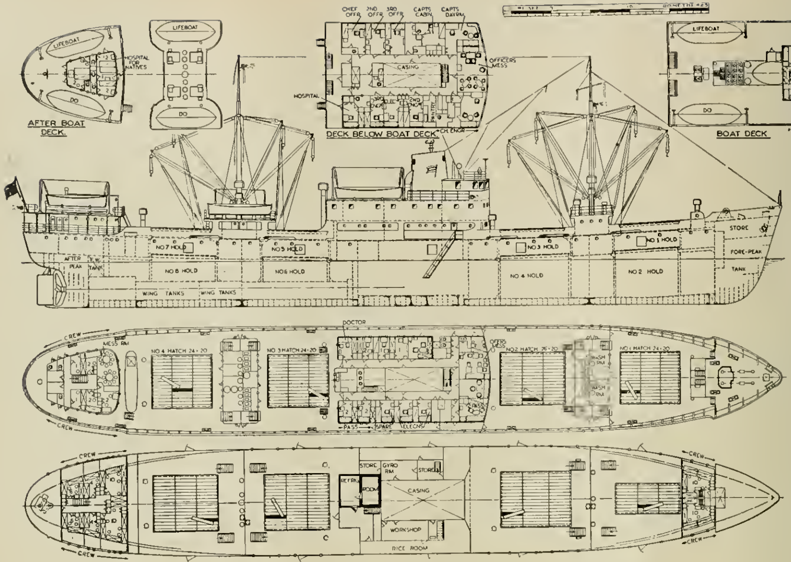
The *Mui Ann* has more than one "first" to her credit. She is the first ship of this type to come into the China trade, although more than 700 ships throughout the world have successfully been powered with GM Diesel-Electric propulsion machinery. The *Mui Ann* is the first ship to be built in Scandinavia to employ this type of power. To Jorgen Krag, owner of the *Mui Ann,* goes the credit for building this vessel. He saw in her a rebirth for the shipbuilding industry in Norway and the construction of new vessels for trade in the highly competitive Orient.

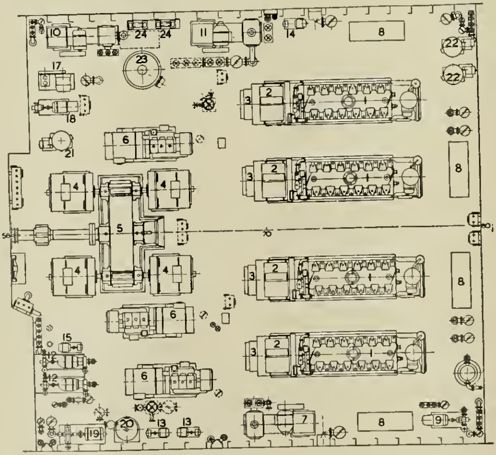
The *Mui Ann* was built at the yard of Kristiansend, Mek Verk, A. S., Kristiansend, Norway. Again the fine craftmanship of the Norwegian shipbuilders was evidenced by the men of this shipyard. Although Kristiansend is not the largest yard in Norway, and the *Mui Ann* is the largest ship yet to be built there, the fundamental principle of Norwegian shipbuilding was apparent throughout the vessel—"only the finest workmanship and the best material is good enough."

George W. Codrington (right), vice president of General Motors and general manager of the Cleveland Diesel Engine Division, is shown with K. O. Keel, chief mechanical engineer, who accompanied Codrington on a trip to Norway to observe the trial runs of the "Mui Ann". They also visited shipyards throughout the Scandinavian countries and Europe.

Although the *Mui Ann* is owned by Jorgen Krag of Norway, she is under charter to the prominent Chinese shipping company, Messrs. Ngow Kock Company, Bangkok, Siam. The first master of the vessel is Captain J. Mattiassen. Mattiassen is not new to the China-Siam trade because twenty years of the thirty-three years he has been a master. have been spent along the China coast and the Yangtze river. J. Walker Cook of Jacksonville, Florida is chief engineer. Cook is also acting as warranty engineer for the Cleveland Diesel Engine Divis-

The Norwegian motorship, "Mui Ann", owned by Jorgen Krag and built at Kristiansend, Norway. This vessel employs the GM Diesel-Electric drive principle. The four propelling engines were built by the Cleveland Diesel Engine Division of General Motors.





Top: General arrangements plans of the "Mui Ann".
Bottom: Engine-room plan of the "Mui Ann".

1.—Main engines. 2.—Propulsion generators. 3—Exciter generators. 4—Main propulsion motors. 5—Main propulsion reduction gear. 6—Auxiliary engines. 7.—Ballast pump. 8.—Lubricating oil filters, main engines. 9.—Fuel oil transfer pump. 10.—Bilge pump. 11.—S.W. ballast pump. 12.—Comb. lub. oil and sea water pumps. 13—F.W. pumps. 14.—S.W. pump. 15.—S.W. sanitary pump. 17—Air compressor. 18.—Lub. oil transfer pump. 19.—Fire pump. 20.—Emergency cooling pump. 21.—Lub. oil purifier. 22.—Fuel oil purifiers. 23.—Donkey boiler. 24.—Steam feed water pumps.

ion of General Motors, builders of the propulsion machinery.

The *Mui Ann* has an over-all length between perpendiculars of 295 feet, moulded breadth of 43 feet, 6 in., and the gross weight is 2750 tons. Although the vessel was designed to do 15 knots, on the trial runs she maintained an average speed of 16¼ knots. The vessel is a welded construction built to the highest class in the Norwegian Veritas and to the rules of the Norwegian Ship Control. Since she is used in the China trade and designed to carry 750 passengers, as well as cargo, the Hong Kong Government rules for the Simla Special Trades on Short International or International Coasting Voyages have been followed in the construction.

There are no cabins on the *Mui Ann*. The passengers sleep on wood-sheathed decks forward and aft of amidships between decks. The passengers' spaces are well ventilated by means of air ducts, to which air is delivered by electrically driven fans. Since the crew will be Chinese, their galleys are equipped with rice boilers. Special galleys arranged in the winch houses fore and aft amidships are provided for the passengers. Aft, on top of the poop house, is the hospital for the passengers and, in addition to the surgery, there are four wards, including one isolation ward. The ship's doctor also has his own room on the shelter deck. All the officers' quarters are located amidships on the bridge deck and the deck below. Furthermore, on the boat deck are three two-man passenger cabins.

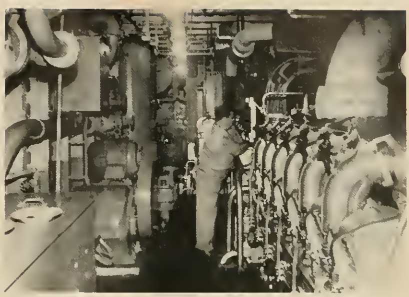
Included in the navigation and radio equipment is a gyro compass, a radar, and echo sounding apparatus. Loudspeaking telephones are installed for communication between the bridge, engine-room and the cabins of the captain and the chief engineer, as well as the forecastle.

The four propelling engines are of General Motors Corporation manufacture and each is a 12-cylinder, two-cycle, Model 12-278A marine Diesel, with a maximum rating of 1200 BHP at 750 RPM. The engines are of the solid-injection type and are complete with integral fuel pumps, combustion air blowers, and required lubricating-oil and water pumps.

Each engine drives a direct-connected, main-propulsion generator with a normal service rating of 605 KW at 560 volts direct current at a speed of 750 RPM. The generators are of dripproof protective construction from above with a combination of water-tight and splash-proof construction from below; self-ventilated with internal fan attached to the shaft; and it contains one grease lubricated bracket type ball bearing at the after end. The front end of the generator shaft is bolted to the engine crankshaft and is supported by the main bearing of the engine. The generators include an integral starting winding for motorizing the generator from a starting battery, for the purpose of cranking and starting the Diesel engine.

The four generators are connected alternately with four propulsion motors in a series propulsion loop circuit. Each motor has a normal service rating of 765 HP at any speed over the range of 700 to 875 RPM. These motors are of construction similar to the propulsion generators with the omission of the starting winding.

These main propulsion generators and main propulsion motors were designed to meet the general requirements of Diesel-electric marine propulsion and to meet the specification requirements as to horsepower and service conditions for this particular application.



A section of the engine room of the "Mui Ann" showing one of the main propulsion engines built by the Cleveland Diesel Engine Division of General Motors.

The four main propulsion motors drive the single propeller through a double-pinion, single reduction gear with a ratio of 6.25:1 to provide a normal service rating of 3000 SHP over a range of propeller speeds from 112 to 140 RPM.

A propulsion motor is coupled to the forward end and another propulsion motor is coupled to the after end of each pinion shaft of the reduction gear with the pinion shaft bearings supporting the one end of each armature shaft. The reduction gear assembly includes an integral propeller-shaft thrust bearing of the anti-friction type completely enclosed and lubricated from the reduction-gear oil system.

The various units of the propulsion excitation and control equipment were designed to comply with the general requirements for marine service, the particular requirements of this installation, and the expected operating requirements of the vessel.

Each main propulsion generator assembly includes an overhung integral auxiliary generator with suitable regulating equipment and of sufficient capacity to permit an output of 24 KW at 120 volts direct current over a speed range of 375 to 750 RPM. Under normal operating conditions, where four propulsion engines are in use, one of these auxiliary generators is operated as a constant voltage source of excitation power for the main propulsion motors and for general control power; another auxiliary generator is operated as a variable voltage source of excitation power for the main propulsion generators; the other two auxiliary generators serve as standby units.

Full maneuvering control is available at either the engine-room control desk by movement of a single handwheel or at the pilot-house control-pedestal by movement of a single handle. Maneuvering control is accomplished by moving the control handwheel or handle in the ahead or astern direction as may be desired and to a position representative of the quantity of propulsion effort de-

(Please turn to page 92)

ARDIS

Navy Dry Dock Dry Docked at Todd's Brooklyn Yard

THE U. S. Navy Floating Dry Dock ARD-18 recently returned from her American base at Argentia, Newfoundland after five years of continuous service dry docking and repairing destroyers, submarines and smaller units of the United States fleet. She is now in Todd Shipyards' Erie Basin yard undergoing extensive repairs and overhauling. The work will be performed in No. 1 Graving Dock and at Pier 5 in the yard.

This "on-the-spot" non-propelled steel vessel is one of many similar type docks which were moored mainly in strategic locations throughout the Pacific Ocean during the war. She will operate in any fairly sheltered position affording sufficient depth of water for full submergence. The ARD-18 and an attendant work barge are completely self-contained and wholly independent of shore services, being equipped with diesel generators which furnish power to operate the dry dock pumps, windlass and winches, and lighting throughout the vessel. Auxiliaries include compressors, welding machines, milling machines, etc. To provide supplementary repair service there is a storage and workshop barge which was floated into the protective cradle of the dry dock during the passage from Argentia to New York Harbor.

OPPOSITE PAGE

Top and bottom: The U. S. Navy floating dry dock, ARD-18, which resembles a ship at one end, shown at the Brooklyn Erie Basin yard of Todd Shipyards. The vessel arrived recently from its American base at Argentia, Newfoundland, for overhauling and extensive repairs. The dry dock is completely self-contained, carrying its own barge workshop, for repair ◀ of ships of the United States Fleet at sea.

The ARD-18 was built in 1944, is 491′8″ in length, has an inside width of 59′0″, a lifting caapcity of 3,500 tons, a 20′9″ draft over blocks, and a 33′3″ draft when submerged. The ARD-18 has twin rudders which ensure effective steering ability during necessary movement under tow at sea.

The dry dock, which resembles a ship at one end, with normal bow, anchors, windlass and a control room on the bridge, has a crew numbering 64, galley, mess rooms, and sleeping accommodations. A comfortable ward room is available to the Captain and officers. Additional emergency quarters are provided on the workshop barge. Across the stern of the dry dock can be drawn a water-tight pontoon gate operated by hydraulic rams which serves to protect the working crew on the pontoon deck during rough weather conditions.

Todd's job calls for the cleaning of five years' fouling from the bottom, including the sea chests and the rudders, examination of rudders and the repacking of the rudder glands, work on the stern gate, renewal of 300 pounds of zinc plates, etc. After sandblasting the bottom, Todd will apply four coats of paint to Navy specifications.

The work also includes overhauling sea valves, opening up and cleaning all ballast tanks, the renewal of portions of the bulkheads, new sealing rings and thrust bearings in the dry dock pumps and checking the water level indicating system. Topside, Todd will install a new dock control system, a new milling machine, take megger readings of electric wiring, renew damaged insulation on bulkheads and deckheads, repair two lathes, open up the diesel engines in the dry dock's two gantry cranes, and renew the tiling on the galley deck. Todd will renew all the hot water piping and finally sandblast and repaint the pontoon deck and the anchor chains.

When the work on the ARD-18 has been completed by Todd Shipyards, she will return to her base in Newfoundland.

Pacific Transport Lines Open Japan Offices

Pacific Transport Lines has opened its own offices in Japan, with the approval of SCAP, and one of Japan's oldest shipping companies, Osaka Shosen Kaisha, is acting as its sub-agent there. In charge of the offices there is A. H. Laidlaw, former owner's representative.

Company President R. A. McLaren, who recently returned from a month's visit to the Orient, is optimistic about the business outlook in Japan. In his opinion, the Japanese will soon control their own destiny, economically and otherwise. He said that Osaka Shosen Kaisha is now active in Japanese domestic shipping, operating 18 vessels and employing more than 5,000 persons. It will shortly take delivery of two large 10,000-ton freighters.

McLaren does not foresee the return of Japanese shipping to the transpacific trades in the near future, for he believes Japanese shipping companies have quite a way to go before reaching saturation point in their own domestic trades.

Nordberg Diesels In Canadian Built Coasters

TWO diesel coasters, the *Zulia* and the *Carabobo,* were delivered in November, one month ahead of schedule, to Compania Anonima Venezolana de Navegacion by the builders, Canadian Vickers Limited.

The contract for the vessels (six in all) was signed in Caracas, Venezuela, on May 10, 1949, and instructions were cabled to Montreal to commence drawing office work the same day. The contract called for delivery of the first two specially designed vessels in December 1949. Each vessel made a successful and satisfactory voyage to Venezuela.

The vessels are designed to trade along the Venezuelan Coast and up the Orinoco River, and it is expected that they will do much to develop the trade in the more remote and less accessible coastal ports and river districts.

They are of the shelter deck type, relatively shallow draft and have a large cargo capacity for their size and deadweight. A full cargo, having a density as light as 82 cubic feet per ton bale, can be stowed, and this results in great flexibility when carrying a cargo of mixed commodities. In addition to the spaces allocated to the carriage of dry cargo, there is also refrigerated cargo space, served by derricks, divided into two chambers, which is to be used for the carriage of meat and vegetables to and from outlying ports.

The vessels are classed Lloyd's 100.A1 and the principal dimensions and technical characteristics are as follows:

Length between perpendiculars	170′ 0″
Breadth moulded	30′ 0″
Depth Moulded to 2nd Deck	11′ 2″
Depth Moulded to Upper Deck	18′ 0″
Full Load Draft	11′ 0¾″
Full Load Deadweight	680 tons
Total Bale Capacity	46,300 cu. ft.
Total Refrig. Capacity	1,230 cu. ft.
Single Screw Nordberg Machinery	900 B.H.P.

The vessels, which comply with Venezuelan local and governmental requirements regarding navigation lights, crew accommodation, etc., have considerably larger complement than is normal for vessels of this size and type, the crew comprising nine officers and twelve crew. In addition, there are two two-berth cabins for owners. The officers' and owners' rooms are situated aft and the crew are berthed forward.

The cargo handling equipment is in excess of that

The "Zulia", which, with the "Carabobo", was built by Canadian Vickers, Ltd., for coastal and river service in Venezuela.

normally found on vessels of this size and type. Four 50 H.P. high speed electric winches are fitted around a central mast amidships, each operating a five ton derrick. One of these winches is fitted with an extended barrel which is used to operate a fifteen ton heavy derrick on the aft side of the mast, this derrick being especially required by the owners for use in handling heavy lifts in remote calling points where shore facilities would be inadequate. The topping arrangements for all derricks are of an improved type, the topping wires being connected to separate topping winches which are driven from the main winch warping ends. The winches are remote controlled and are situated on top of the masthouse, giving operators a clear view into the hold and onto the wharf, and are placed adjacent to each other so that one operator can operate both winches when using the Burtoning system.

The two cargo hatches are extremely large, 30 ft. x 16 ft., the holds and tween decks have been kept as free as possible from stanchions, and the clear tween deck height has been preserved by fitting the longitudinal girders above the deck incorporated with the hatch sides, the winches being mounted on a raised platform between the two hatches.

Deck equipment includes an electric windlass forward and mooring capstan aft and the steering gear, operating a semi-balanced steamline rudder in an open fabricated sternframe, is of the two ram, electric hydraulic type, controlled by telemotor from the wheelhouse and by local control at steering gear position.

During trials on the St. Lawrence River, the vessels proved extremely easy to handle and showed great maneuverability.

These vessels are each powered by a Nordberg six cylinder diesel engine, 13″ bore by 16½″ stroke, directly coupled to the propeller shaft; the engine is reversible and capable of developing continuously 900 B.H.P. at 450 R.P.M. It is fitted with a Buchi exhaust gas supercharger and a built-in roller thrust bearing of Timken make. A high water temperature and low oil pressure alarm is inserted in each of these systems.

Auxiliary power is supplied by three General Motors, Model 4064B, 40 k.w. diesel generator sets capable of being run in parallel.

The 250 lb. air starting system for the Nordberg main engine consists of two air tanks, one motor driven air compressor and one diesel driven air compressor. The latter is capable of being started by hand.

The fuel oil, which is carried in the double bottom, is transferred to a settling tank by two motor driven fuel oil transfer pumps, automatically controlled by the level of oil in the settling tank.

Although the Nordberg main engine drives the fresh water pump, the salt water, the scavenge lube oil and the pressure lube oil pump, there is also a motor-driven fresh water pump and a motor-driven lube oil pump which are used for circulation before and after the main engine is started or stopped, and also in case of breakdown of the engine-attached pumps. Their capacity enables the Nordberg diesel to develop full power.

The propeller shaft is 10″ in diameter, fitted with special design half coupling and supported by Ryertex bearings at the aft end and forward end of the sterntube. The propeller is of manganese bronze and pitch planed.

A list of the auxiliary equipment in the engine room, with their capacity and makers' name, follows:

Item	*No. and Size*	*Make*
Propeller	One working and one spare	Kennedy Bros.
Stand-by lube oil pump	140 U.S.G.P.M.	Roper
Lube oil filter	One	Hilliard
General service pump	250 U.S.G P.M. 150′ Hd	Worthington
Bilge pump	250 U.S.G.P.M. 70′ Hd	Worthiogtoo
Stand-by fresh water circulating pump	110 U S.G P.M. 30′ Hd	Worthingtoo
Fuel oil transfer pump	2—32 U.S.G P.M. 70′ Hd	Worthington
Air compressors	2—7.75 C F.M. at 250 p.s.i.	Quimby
Exhaust silencers		Maxim

Principal suppliers of hull equipment are as follows:

Equipment	*Supplier*
Engine Telegraph	Henschel Corporation, U.S.A. through J. E. Fouchaux Co., N. Y.
Lifeboats	Houde & Bergeron, Quebec
Davits for Lifeboats	Samuel Taylor & Sons, England through Triumph Continental Prod., Mtl.
Anchors & Cable	Baldt Anchor Chain Co., U.S.A. through Drummond, McCall & Co., Mtl.
Winches	Lake Shore Engineering Co., U.S.A.
Windlass & Capstan	Hyde Windlass Co., U.S.A.
Hardware	Wm. McGeocb & Co., Scotland through C. O. Monat & Co., Montreal
Berths (Metal)	Foster Bros. Ltd., U.S.A.
Plumbing Fixtures	Jas. Robertsoo Co., Montreal
Compasses & Nautical Instruments	Kelvin, Bottomley & Baird, Montreal
Sidelights	Thompsoo Bros. & Co., England
Refrigerator (Domestic)	McDooald & Willson Co., Montreal
Refrigeration Plant (Cargo)	Carrier Engineering Ltd., Torooto
Steering Gear	Donkin & Company, England through C. O. Monat & Co., Montreal
Fire Fighting Equipment	Safety Supply Co. Ltd., Montreal
Booms (Cargo)	U. S. Steel Export Corp., U.S.A.
Calorifiers	H L. Peiler & Co., Montreal
Tiling	Heffernan Tiles Ltd., Montreal
Upholstery—Curtains—Canvas	P. Rooney & Co., Montreal
Selbalith Deck Covering	Atlas Asbestos Co., Montreal
Main Switchboard & Power Panels	Plainville Electric Products, U.S.A. through J. E. Fouchaux Co., New York
Generators	General Motors Corp., U.S A.

Also being planned at Canadian Vickers are 6,000-ton ships for Flota Mercante Grancolombiana; a Diesel-electric dredge for Standard Oil Company (New Jersey); a lighthouse tender and buoy vessel for the Department of Transport; and a lightship for the Department of Transport.

San Francisco Heliport

The San Francisco Heliport, situated at the foot of Market, adjacent to the Ferry Building, has been completed. It is located on the war-built Navy landing pier.

The new facilities were officially opened and dedicated by civic, state and government officials February 28, after which several "Hiller 360" helicopters, operated by commercial firms, participated in a practical demonstration of the feasibility of the new heliport.

It is anticipated that these new facilities will soon develop Inter-Bay-Point transportation and immediately become a base for commercial and industrial rotary wing activity in the heart of San Francisco.

New Control Apparatus For S. F. Drawbridge

AUTOMOBILE AND SHIP traffic can "take turns" using the new drawbridge over Islais Creek across San Francisco's Third Street, with a minimum of delay or inconvenience to both means of transportation, as a result of the latest type of control apparatus which regulates the opening and closing. The double bascule structure will be operated by a bridge tender who has "fingertip control" over a complex series of steps which are involved whenever the two bridge leaves are raised to permit passage of a vessel.

Seated at the control console — which was designed and built at the Sunnyvale, Calif., plant of Westinghouse Electric Corporation — the bridge tender can observe vessels approaching in either direction along Islais Creek. When a ship desires passage through, a whistle signal conveys that information, and the bridge operator acknowledges with a navigation siren. This exchange is made when the ship is still at a sufficient distance from the bridge so that it can maintain headway while the leaves are being raised. However, the creek channel has "Stop" and "Go" signals, and if a vessel should approach within a minimum distance before the "Green Light" has come on it is required to halt immediately as a safety measure.

Before raising the two bridge leaves (sometimes only one, if a small vessel is passing through) the bridge tender takes elaborate precautions for the safety of street traffic. First, he pushes a button to operate a siren to warn street traffic that the bridge is about to be raised. Next, he pushes a button to change traffic lights to red at either end of the bridge, which automatically starts traffic warning bells which ring continuously all the time the bridge is closed to street traffic. As soon as movement on the roadway has stopped, he pushes other buttons which lower the "oncoming gate" barriers at both ends. As soon as he is certain that no vehicles are left on the bridge, he similarly lowers the "offgoing gates." This is to make sure that no motorist could possibly swerve to a left hand lane and try to drive onto a bridge that "wasn't there."

Only after all these steps have been completed does the bridge tender press the button which unlocks the two leaves, and turn the rotating control handles — similar to those in street cars — to regulate the raising of the leaves. It ordinarily takes about a minute to raise or lower the leaves. Two dials show the operator the exact position of both leaves at all times. When each leaf approaches its fully-raised position, he slows its movement until it is "seated" against its rest. Then, he turns the handle to the "Off" position, which automatically locks the leaf in the raised position.

When the leaves are lowered after the passage of the

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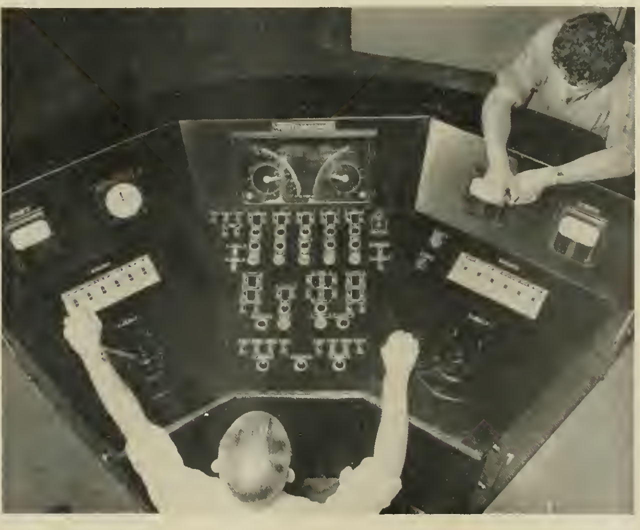


The entire sequence of steps for raising and lowerin the leaves of the new Islais Creek drawbridge across San Francisco's Third Street are under the "fingertip control" of the bridge tender seated at this control console. This picture, taken as the apparatus was receiving final production touches at the Sunnyvale, Calif., plant of Westinghouse Electric Corporation, shows how he can check the exact position of each leaf by looking at the dials visible directly underneath the Westinghouse nameplate. Except for the two rotary control handles which control the actual raising and lowering of the two leaves, all controls are by pushbuttons located directly in front of the operator.

Recent Developments In Ship Propulsion Gearing

By W. A. WITHAM
Of Western Gear Works, Lynwood, California

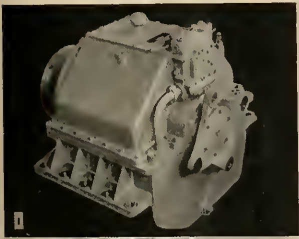
THE purpose of this paper is to review the progress that has been made in the past few years in the application of modern, high precision, high hardness gearing to marine propulsion machinery and to evaluate the resultant savings made in weight and space. Little or no publicity has been given to the work already accomplished in this direction through the early developmental stages.

One of the first, if not the first, really light weight marine propeller reduction gears was a spiral bevel planetary unit, shown in Fig. 1. This view shows the input end of the gears, with the integral lube oil pump and valves, just above the input coupling flange, in a readily accessible location. Fig. 2 shows this unit with the upper half of the housing removed. The two large spiral bevel side gears and portions of three of the six planet pinions can be seen. The helical gear at the input end is the drive gear for the lube oil pump. The output coupling flange projects from the rear of the unit and just forward of the flange is the massive propeller thrust bearing housing.

This unit was built in 1943, and further developed in the succeeding few years, as time permitted, for application to an Enterprise DMG engine rated at 950 HP at 500 rpm. This unit provided a 2:1 reduction ratio, delivering an output torque of 240,000 lb.-in., in a space envelope of roughly 10 cu. ft. and with a weight of 4470 lbs. A conventional gear to do the same job would weigh approximately 12,000 lbs and would occupy a space of 55 cu. ft.

The unit was installed in the 136 ft. tuna clipper, *Sherry Ann*, Fig. 3, which was designed by Jim Petrich and built by the Western Boat Building Company of Tacoma. She was christened on June 16, 1946 and has now given over three years of eminently satisfactory service.

The compactness of the planetary gear permitted it to be located over 40 ft. aft of the engine, as shown diagrammatically in Fig. 4, in waste space at the bottom of the shaft alley just ahead of the stern packing gland. Fig. 5 shows the unit in position in the shaft alley before installation of the refrigeration and auxiliary machinery. The high speed intermediate shaft is shown, driving the gear through a laminated steel disc coupling. Fig. 6 shows the unit after installation of all piping and machinery in the shaft alley. The gear unit is entirely below the planking of the walkway, which is carried by the two steel angles. This location resulted in a weight saving of approximately 3500 lbs. in shafting, inasmuch as the 40 ft. intermediate shaft carried only one-half the torque that would normally be required. This arrangement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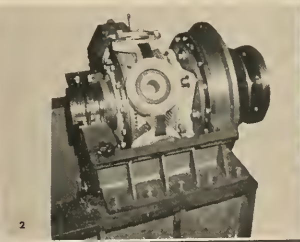
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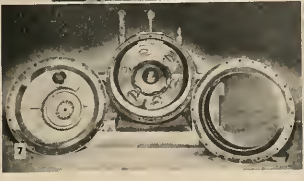
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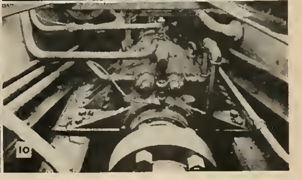
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This paper was presented by P. E. Forsythe of Western Gear Works, Seattle, Washington, at a meeting of the Society of Naval Architects & Marine Engineers at Long Beach on January 24, 1950.

also resulted in a considerable increase in cargo space by eliminating the space normally required for a bulky reduction gear coupled to the main engine and wasting valuable space amidships. No torsional resilience was provided in the system to protect the gears against the possibility of severe torsional vibration transmitted from the engine.

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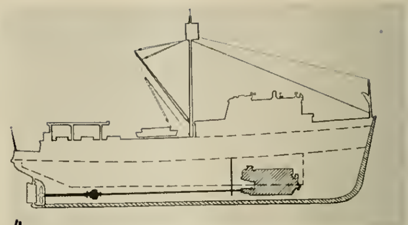
The bevel planetary unit being somewhat restricted with respect to reduction ratios obtainable, the maximum reduction being about 2.5:1, we next designed and developed a second planetary type gear, using helical gearing, wherein reduction ratios up to 6:1 may be accommodated, making this unit suitable for use with the high speed engines now available. The first unit built, shown partially disassembled in Figure 7, was designed to handle the output of the Fairbanks-Morse two-cycle, opposed piston engine which develops 1600 HP at 720 rpm. This gear provides a 3:1 reduction ratio, weighs only 3500 lbs., and occupies a space of approximately 8 cu. ft. The photo shows the sun gear and input end plate at the left, and the flexibly mounted internal, reaction gear at the right. The center figure shows the main housing, looking at the forward end of the planet cage which carries the six planet pinions. The first installation here on the Coast went into the 165 ft. clipper, *Scarlet Queen*, see Fig. 8, which has now been in service almost two years and recently returned from southern waters in record time with a record catch of 600 tons of fish.



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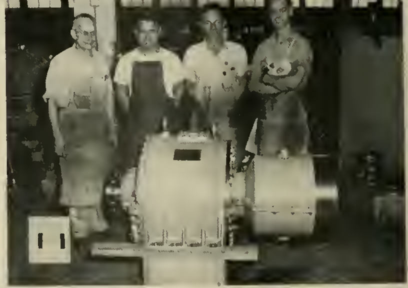
The *Scarlet Queen* was converted from an ATR fleet rescue tug by the Tacoma Boat Building Company and repowered with the Fairbanks-Morse engine which drives her at a speed of 12 knots through the planetary reduction gear.

Another of these helical planetary units was installed in the *Mary E. Petrich*, Fig. 9, a 150 ft. by 34 ft. tuna clipper, an outstanding design by Jim Petrich, built by Western Boat Building Company and launched in March of 1949. The 3:1 reduction gear drives the 107″ diameter by 82″ pitch propeller at 240 rpm, giving the *Mary E.* a top speed of 14.6 knots, making her, according to report, the fastest boat in the fleet.

Fig. 10 shows the Western Planetary Gear in position in the *Mary E.*, again located in the shaft alley just ahead of the stern packing gland. It is so low that the regular walkway between the brine tanks passes over the gear



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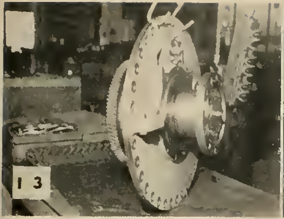
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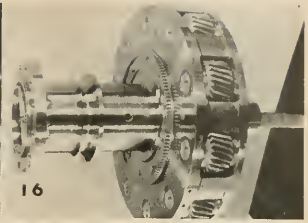
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without interference. This view shows the lube oil pressure and scavenge pumps driven directly by the gear. The oil sump, heat exchanger, and filter are located just above and aft of the gear at the side of the shaft alley.

In both of the applications to the Fairbanks-Morse engine, a scoop tube type hydraulic clutch located adjacent to the engine turns the long drive shaft which transmits the power to the gear through flexible couplings just ahead of the gear. This type of installation is far more favorable than a rigidly coupled drive inasmuch as the transmission of torsional vibration from the engine to the gear is effectively damped, permitting somewhat higher gear and bearing loadings and perhaps contributing to longer life.

Having established several basic design principles, which all available evidence proves to have completely eliminated all of the faults which once were considered inherent in a planetary type gear, we have now gone considerably further in their application.

Fig. 11 shows a high precision, light weight planetary gear designed to transmit 7500 HP at 1800 rpm with a 6:1 reduction. Based on a design specification requiring minimum weight and space, a comprehensive study was made to determine the lightest and most compact system which would transmit the specified power to accomplish the desired results without stressing the materials used beyond established safe limits. These studies resulted in building a two stage simple planetary system using 10 planets in each stage, all gearing being casehardened or nitrided, the entire unit including the fabricated steel housing and duplex lube oil pumps weighing only 2100 lbs. Further weight reduction could be effected by using an aluminum or magnesium housing and by reducing section thicknesses of various parts, now that design parameters for a unit of this size have been established.

Although this unit is small and compact in comparison to conventional propulsion gears, it is, to our knowledge, considerably larger than any planetary gear previously built, using hardened gearing. Because of the great extension required to adapt existing practices and techniques to the manufacture of this unit, a great deal of manufacturing development work was required and many new and novel tools and methods were evolved. However, this unit was produced and similar units can be produced in quantity on standard machine tools of relatively small size, available for the most part in large quantities. It was necessary to rebuild several machines to improve accuracy or to extend their capacity, but when it is considered that this 2100 lb. gear unit can replace a conventional gear weighing over 75,000 lbs. and occupying 225 cu. ft. of valuable space, 217 cu. ft more than the 8 cu. ft. required for the duplex planetary unit, the effort appears worthwhile. In the event of hostilities and a demand for production of such material in quantity, this unit could be manufactured by many organizations familiar with high precision, casehardened gearing on equipment already, or quickly, available. The scarcity of large precision hobbing machines capable of producing conventional gears of large size was a serious bottleneck in the past war, to say nothing of the difficulties ex-

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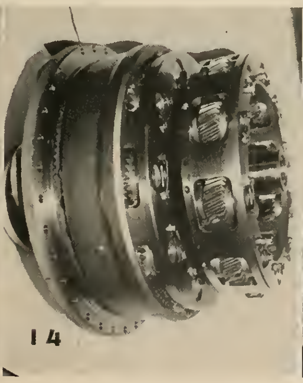
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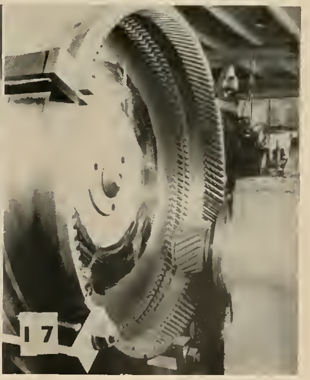
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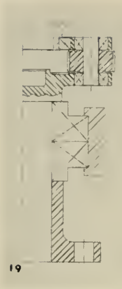

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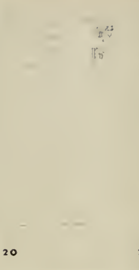

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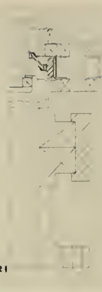

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perienced in obtaining forgings for the rims of the large "cream cheese" bull gears.

Fig. 12 shows the gear with the input end plate and first stage sun gear removed.

Fig. 13 shows the first stage sun gear assembled into the input end plate.

Fig. 14 shows the stack-up of parts in the gear, the outer housing and the first stage sun and internal gears having been removed.

Fig. 15 shows the first stage planet cage assembly with the ten planets in place, mounted on nitrided steel journals with silver bearings.

Fig. 16 shows the second stage planet cage assembly which is integral with the output shaft. The lube oil pump drive gear is also shown on the after side of the cage.

We are now in the final stages of development and manufacture of a gear of a similar nature which will transmit over 9,000,000 inch-pounds of torque to the propeller. The largest gear in this unit, shown in Fig. 17 running with one of its mating planets, is approximately 50 inches in diameter. One of the chief problems in the production of this unit has been the manufacture of this 50-inch carburized and casehardened helical gear to the required degree of accuracy. The final production gear has been produced to the same degree of accuracy which we normally maintain on high precision aircraft gearing, which, in a main propeller reduction gear, seldom, if ever, has exceeded 14 inches in diameter. This 50-inch gear is precision shaped, shaved to further refine the tooth profiles and spacing accuracy, gas carburized in a specially designed retort providing a closely controlled carburizing atmosphere, quenched in oil in a specially designed quenching press, the teeth shot peened to build up the residual compressive stress to a maximum and also to accomplish minor corrections in out-of-roundness and finally lapped with specially designed, ground profile, crossed axis laps to finish the teeth to the desired lead and involute form. When it is considered that this gear, which weighs only slightly more than 200 pounds will do the same work as a conventional bull gear of about 100 inches in diameter and weighing probably 30,000 pounds, the value of this modern gearing for ship propulsion becomes readily apparent.

Two major factors contribute to the high load carrying capacity and light weight of all of these units. Basically, the distribution of the imposed load over the considerable number of tooth meshes provided by multiple planet pinions divides the load at each mesh proportionately, whereas in the conventional parallel axis reduction gear, the load is carried at a single mesh.

The second and extremely important factor which permits light weight with maximum reliability is the use of casehardened gearing. Allowable tooth loading is more than doubled in comparison with conventional marine gearing which ranges from 180 to 225 Brinell hardness. Casehardening produces a surface hardness of approximately Rockwell C 60, and extremely favorable residual compressive stresses in the tooth surfaces which result in tremendous increases in fatigue life.

An extra dividend paid by planetary gears is the reduction in the velocity of tooth engagement of the gears. The energy of sound emitted by gearing being proportional to the velocity, a reduction in velocity will reduce the noise generated. In the 7500 HP planetary unit shown previously, the absolute pitch line velocity of the 16 in. sun gear at 1800 rpm is 7550 ft./min. and that of a 16 in. input pinion of a conventional gear the same. However, in the planetary system, the planets and cage are rotating in the same direction at a little less than one-half the number of rpm of the sun, giving an actual velocity of tooth engagement of only 4760 ft./min. The velocity of tooth engagement of the conventional gear is the actual pitch line velocity, namely 7550 ft./min. Our experience has indicated that our planetary units are inherently quieter than our conventional units of equivalent capacity.

In combination, the high hardness and the multiple tooth contacts permit the use of smaller gears which can be produced in standard high precision gear cutting machines to a much higher degree of accuracy than large, soft gears. These factors also permit the use of substantially narrower face widths. The narrow faces permit the utilization of substantially the entire tooth face under all conditions of loading without fear of misalignment due to distortion or deflection of the gear case due to deflection of the foundation. In conventional gearing with wide faces, it is seldom, if ever, possible to realize uniform contact across the entire face width. The shaft bearings in a conventional gear are loaded by the gear reaction forces. They must be spread well apart for stability, necessitating a massive and heavy connecting structure that will resist deflection. The foundation under the gear cannot be made perfectly rigid in a ship as it might be in a stationary power plant and, accordingly, deflection and weaving of the hull invariably produces misalignment of the shafts and loading at the extreme ends of the gear teeth. Such end loading results in excessive noise and high localized stresses which may cause premature fatigue failure.

In the past, one of the chief criticisms of planetary gearing was the supposed difficulty or even the impossibility of obtaining and maintaining equal load distribution between the mutiple planet pinions. This difficulty has been completely overcome, in part by improved accuracy of modern machine tools, but to an even greater extent by improved design and better knowledge of the characteristics of materials. The improvement in accuracy of machine tools is well recognized and needs no further elaboration. The improvement in design is based on a change in fundamental thinking with respect to the best use of engineering materials. It was customary in the past to mount all members of a planetary system as rigidly as possible, making the parts massive and rigid in themselves, as well as attempting to obtain great rigidity of the entire system. This thinking was discarded in the development of aircraft planetary reduction gears, due to the absolute necessity for light weight components. It was found that by designing on the basis of controlled flexibility, rather than maximum rigidity, the great savings in weight could be effected through the more economical use of material and, of more importance, reliability could be improved by the elimination of extremely high localized stresses normally produced by minute deflections taking place in theoretically rigid systems.

The development of this thinking and its results can best be illustrated by the construction of one of the marine planetary gears which has already given eminently satisfactory performance in service.

The backbone and only rigid member of the system is the combination output shaft and planet pinion cage shown on Fig. 19. This short massive shaft, mounted on well spaced bearings, is not subject to deflection of any measurable magnitude. Actually, because of the design and placement of the bearings and material and the balanced loading produced by the multiple planets, the loading on this shaft and bearing system is practically zero except for the weight of the part itself and the torque transmitted. The gears do not impose any radial or thrust loading on the main bearings in the planetary system, whereas, in a conventional gear, the separating forces at the gear mesh impose heavy radial loadings on the bearings and tend to deflect the shafts.

Other components of the planet system are permitted to float and to deflect in order to align themselves with the planet system and to distribute the load equally between the multiple planets. A typical design of the internal reaction gear is shown in Fig. 20. This gear is constrained only against rotation. The double engagement type gear coupling permits parallel or angular misalignment, thus allowing the gear to follow the movement of the planet system without constraint. Further, the rim thickness of the internal gear is held to an absolute minimum without overstressing, permitting the gear to "breathe" and to assume a somewhat polygonal shape under load. Thus, if one planet is slightly out of position and trying to carry more than its share of the total load, the gear can deflect and "back away" from the load, thus relieving any overloading of this one mesh.

A typical sun gear design and mounting is shown in Fig. 21. It will be noted that the same basic principle has been used in mounting this member, thus permitting

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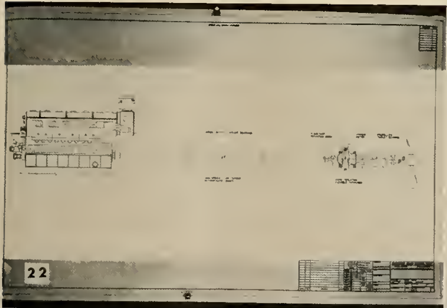
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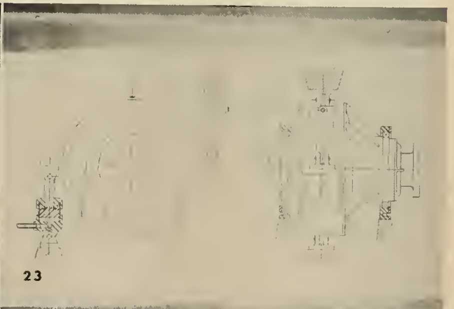
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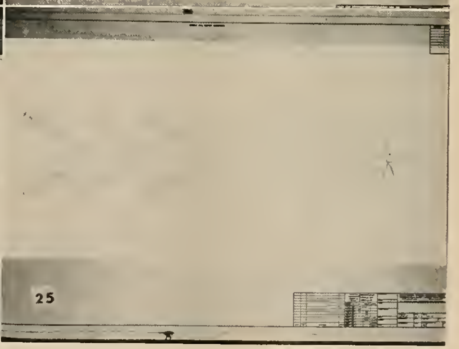
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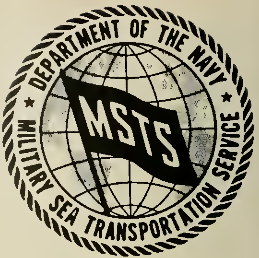
A New Symbol On the Seas



The newly adopted flag of the Military Sea Transport Service which replaces the flag of the Army Transport Corps on U. S. transports.

Vice Admiral George D. Murray, USN, Commander, Western Sea Frontier, speaks at the Pier 7 "Change of Command" ceremonies inaugurating transport operation by Military Sea Transport Service on March 1 at San Francisco.
Left to right: Capt. Jas. V. Query, Commanding Officer of USS "General William Mitchell"; Major General Keller E. Rockey, U. S. Marine Corps, Commanding General, Department of the Pacific; Major General James A. Lester, U. S. Army, Commanding General, San Francisco Port of Embarkation; Speaker, Vice Admiral Murray; Captain William R. Thayer, U. S. Navy, Commanding MSTSPAC; Rear Admiral B. J. Rodgers, U. S. Navy, Commandant, Twelfth Naval District; Major General W. M. Robertson, Sixth Army.
In the ceremony General Lester transferred command of the Army's transports to Captain Thayer.

Official U. S. Navy Photograph

Army Transport

By JAMES A. SULLIVAN
Public Information Officer
San Francisco Port of Embarkation

THE Army's *sea* transportation service wrote a memorable record of service and achievement in the 52 years of its existence.

Born in San Francisco in 1898, it served the nation in three wars, in dozens of emergencies, and in the maintenance of our outer defense perimeter in the periods between wars.

It was for its first 25 years mainly a Pacific service, except, of course, for the transportation of troops and supplies to Europe in World War I. In that first quarter century the nation's outposts were in the western ocean and the Army transport system served them well. There was in that time one Atlantic run, between New York and Panama. It was not until 1923 that intercoastal runs were initiated.

For the greater part of its active and energetic life the Army's sea arm was know as the Army Transport Service, and so deeply is that name ingrained in the maritime industry that maritime men and publications still refer to it as the ATS.

In 1942, when the Army combined all phases of land and water transportation into one agency, the ships raised the house flag of the Army Transportation Corps which became in World War II the greatest shipping organization the world had ever known.

The Army's sea arm had its beginnings during the Spanish-American War when it was decided to send troops to the Philippines. Nine commercial ships were chartered, and three of them — the *City of Peking*, the *City of Sydney*, and the *City of Para*—launched the new service by sailing from San Francisco on May 25, 1898 for Manila.

Other vessels of that first Army fleet were the *Morgan City*, the *Ohio*, the *Pennsylvania*, the *Indiana*, the *St. Paul* and the *Scandia*, later known as the *Warren*. In 1899 the *Sherman*, the *Sheridan* and the *Hancock* were added; the next year the *Thomas*, the *Logan*, the *Meade*, and the *Sumner*. Subsequent additions of the period were the *Buford*, the *Crook*, the *Kilpatrick* and the *Dix*.

That fleet was dispersed in 1902, and three years later there remained in service only seven ships. The *Thomas*, *Logan*, *Sherman* and *Sheridan* were on the San Francisco-

Hawaii-Guam-Manila run, with a sailing the fifth of every month and the ship returning to home port on the 15th of the second month following. The *Crook* and the *Buford* were used for special missions, including Alaska trips, and the *Dix* for hauling cargo all over the Pacific.

It was a busy operation, interrupted only occasionally by such emergencies as that which saw the *Buford* dashing to Galveston, Texas, to aid in flood relief in 1914.

World War I saw some of the ships and much of the personnel transferred to the Atlantic, but there remained sufficient tonnage and men to accomplish such special missions as strengthening Hawaiian defenses and transporting railroad equipment to Siberia for the expeditionary force there. Army Transport Service and the Navy, working together on the Atlantic side, operated 600 ships, 170 of them troop carriers, in supporting the forces in Europe during that period.

At the war's end ATS helped rush the troops home, carried back the remains of those who had lost their lives in the conflict, and as a special job repatriated Czecho-Slovakian forces from Siberia to their homeland.

By that time the Army's prewar ships were obsolete. They were coal burners and the maritime industry was turning to fuel oil.

Shopping around through the emergency fleet, the Army's marine architects found in Shipping Board Class B vessels then under construction a vessel of the type required, and four were purchased. They were christened the *Chateau Thierry,* the *St. Mihiel,* the *Cambrai* and the *Somme.* Another acquisition at this time was the *Madawaska,* renamed the *U. S. Grant.*

The *Grant* merits a special paragraph of its own for it became possibly the Army's best known transport. The Information Office of the San Francisco Port of Embarkation still receives an occasional call asking its whereabouts. Originally the *Konig Wilhelm II,* a German liner in the South American service, the ship dashed into Hoboken at outbreak of World War I to enter voluntary internment. Seized by the United States in

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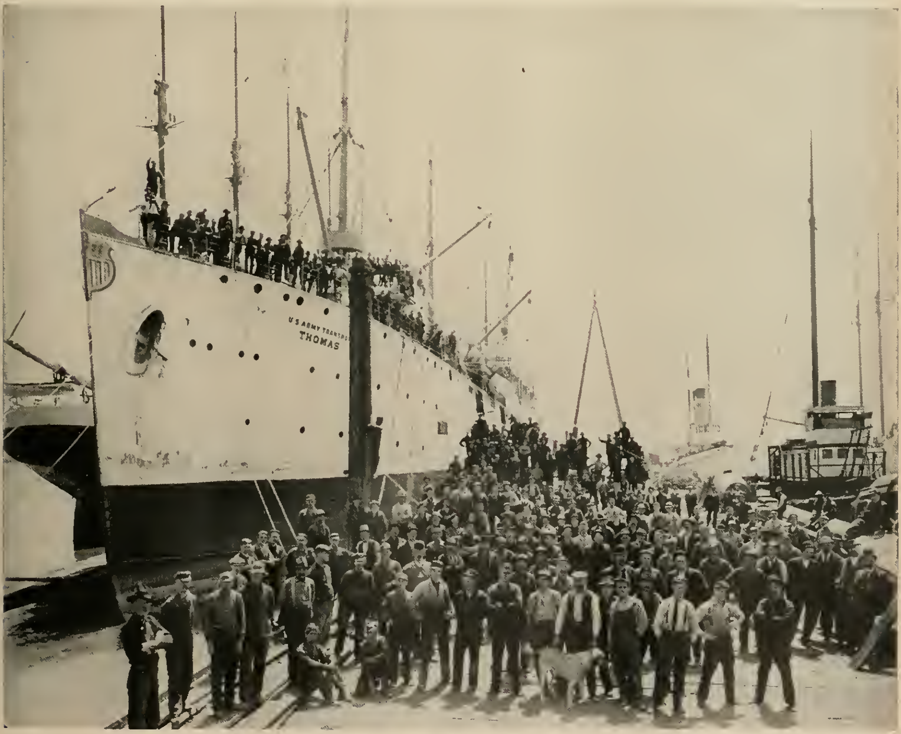
U.S.A.T. "Thomas" and Army tug "Slocum" at Moore & Scott Ship Yard, Oakland, Calif., August 1910. The "Thomas" is being rebuilt and overhauled here and group of mechanics engaged in the work are shown in this picture. The "Thomas" was the largest vessel ever taken up "Oakland Creek." *Photo courtesy of Marine Electric Company, San Francisco.*



San Francisco Maritime Museum Planned

Photo by Karl Kortum

Hawaiian ship "Kaiulani," last existing American-built square rigged merchant ship, planned to be the centerpiece of the museum's aquatic area.

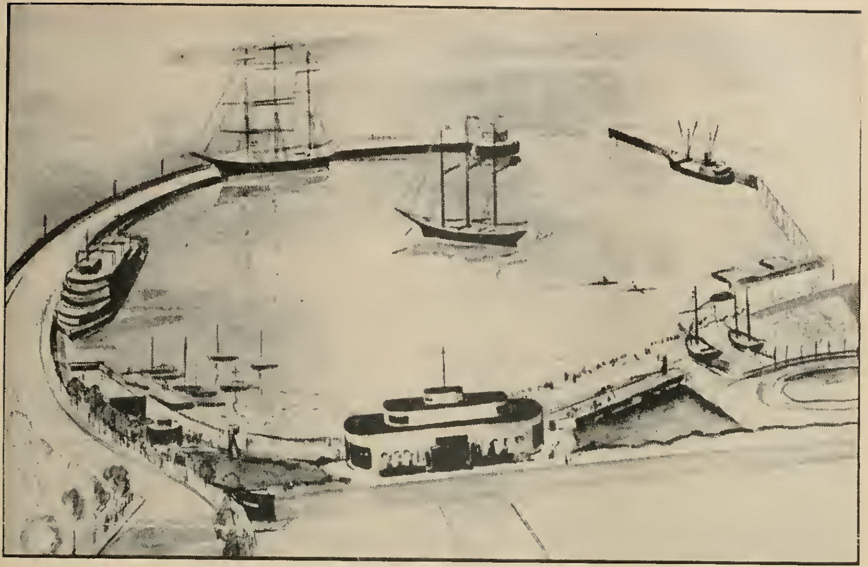
IN ORDER THAT San Francisco's romantic maritime history may not be forgotten, a plan is now in the making for a maritime museum of which the main exhibit would be living, floating, sailing ships associated with the history of the Golden Gate. The maritime museum would be in the Aquatic Park area, the ships being moored to the Municipal Pier or anchored in the basin. Several smaller vessels would be drawn up out of the water in a replica of an old time shipyard. On the eastern side of the Park area a replica of an early day San Francisco plaza would sit beside a historical railroad museum. It would be complete with 1850-type buildings, cobble stone streets, and a rococco style cable car station. The Aquatic Park building would house a collection of ship models, of paintings, relics, log books and other items connected with our maritime tradition.

The committee for San Francisco's Maritime Museum is now acting to obtain several of the oldtime ships to recondition and preserve in the museum's aquatic area. Among these are the following: the scow schooner *Matilda*; the bark-rigged *Kaiulani,* which should be the centerpiece of the restoration for she is the last existing American-built square rigged merchant ship and for nearly fifty years San Francisco was her port of registry; the *City of Papeete,* in her early days a San Francisco mail packet plying between the mainland and the South Seas; the paddle wheel steamer *Capital City*; the three-masted schooner *Charles R. Wilson*; and the *Gjoa,* first ship to get through the Northwest Passage to San Francisco, a ship which has been preserved by the Gjoa Foundation and is now on display at Golden Gate Park.

The Citizens Committee for the Maritime Museum consists of Edward H. Harms, Chairman, Albert W.

Left to right: Al Gatov, Harry Lundeburg; Mayor Elmer Robinson, Ed Harms, Capt. Chas. May. The figurehead is Mary Queen of Scots from the ship "Kenilworth," and the ship model is the "Santa Clara."

Photo courtesy of "San Francisco News"



Artist's drawing of proposed Maritime Museum in San Francisco's Aquatic Park area.

Gatov, Vice-Chairman, M. A. Cremer, Secretary, and I. W. Hellman, Treasurer.

Members of sub-committees are as follows: Executive—B. J. Feigenbaum, Chairman, John Cushing, George Killion, Harry Lundeberg and Mrs. Nion Tucker; Finance—Campbell McGregor, Chairman, Raymond Armsby, D. N. Lillevand, Alma de B. Spreckels, Paul Verdier, and T. C. Ingersoll; Procurement—Michael J. Ryan, Chairman, Louise A. Boyd, H. T. Haviside, Capt. Charles May, William Mills and Joseph A. Moore, Jr.

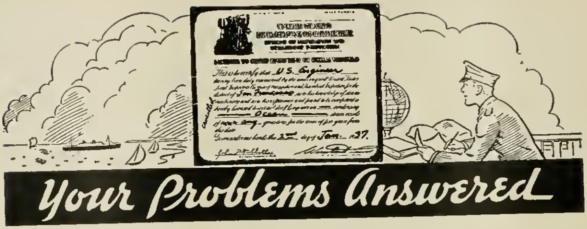
New Control Apparatus For S. F. Drawbridge

(Continued from page 48)

vessel, both motor and shaft brakes are used to prevent them from slamming down too quickly. As the leaves approach the fully-lowered position, they are again slowed, seated, and locked firmly together for road traffic. After that the gate barriers are raised, the warning bells stop ringing, and signals turn to green for vehicle traffic along Third Street, while red navigational "traffic lights" warn ships on the creek channel. The average road traffic halt is expected to be from four to 15 minutes, depending on the size and speed of the ship going through.

Although all controls are interlocked to make sure that the proper sequence of steps is followed in the bridge's raising and lowering cycle, switches are provided to enable the operator to by-pass this sequence if an emergency occurs for any reason. The apparatus also has a complete duplicate set of control cables which can be put into service instantly if necessary. By glancing at the lights on the panel, the operator can check the status of any element of the control system. Except for the two rotary control handles for raising and lowering the bridge leaves, all controls are by push-buttons located in the console directly in front of the operator.

In addition to building the control console, the Westinghouse Sunnyvale plant furnished all the other main elements to operate the bridge. The plant built four variable speed 20-horsepower electric motors to raise and lower the heavy, but carefully counterbalanced, leaves. Other apparatus from Sunnyvale includes main control board, secondary control boards, transfer switches, four main leaf brakes, two shaft brakes, one "leaf lock" motor with motor-mounted disc brake, and miscellaneous small switches. The general contractor for the City and County of San Francisco, operators of the bridge, is Duncanson-Harrelson. The structural contractor is Judson-Pacific-Murphy. The electrical contractor is the Enterprise Electric Works of San Francisco.



Your Problems Answered

by "The Chief"

"The Chief's" department welcomes questions—Just write "The Chief," Pacific Marine Review.

Propeller Design, Rudder Area, Compass Formula, Anchor Size, Etc.

SEVEN ship's officers were seated around the large table in Chief Engineer Frank Farran's office. The setting sun shone through the port and the beam of light moved slowly up and down from deck to bulkhead and back as the freighter *Marine Reviewer* rolled in the more than moderate sea. Frank Farran spoke.

"Fellows, for the benefit of the two new men here, let me say this is the twenty-seventh of our monthly seminars in which we ship's officers gather together for a couple of hours of just talk. We discuss engineering and deck matters or anything that pertains to the welfare of the ship or to our self-improvement. As announced in the letter on the bulletin board, our subject this evening is a letter from my friend in Salina Cruz, Oax., Mexico. I'll read it.

"'Dagoberto Tortolero ————.
Salina Cruz, Oax.
Jan. 14th 1950
Mr. Frank Farran
Chief Engineer, S. S. *Marine Reviewer*
San Francisco, California, U. S. A.

You will remember me. We met here in Salina Cruz and you promised to answer questions in monthly officers' meetings. I send you the following:

1st. What are the proportion which are mixed—the water and the alcohol in the bowl of a Lionel Compass, 7¾ inch diameter, marked 712 (1) 241/ 1942? I know the weight of the water and the alcohol must be slightest less than the card but I do not know the weight of the card.

2nd. How do you find the area of the rudder for a ship?

3rd. Where can I find the proper size of an anchor of a ship?

4th. How do you find the proper size of a condenser fot a certain engine?

5th. How do you find the proper size of the propeller for a certain engine?

I regret if I bother you with my answers, nevertheless I will be very obliged to you with your kindness forgiving my poor English. You can answer me in that language. Thanks.

With my kindest regards I remain
Very truly yours,
DAGOBERTO.'"

Farran continued. "He need make no apologies for his English or his spelling as his English is better than Mac McCoy here, the Irisher first assistant born in the U. S. A. and a lot better than my Spanish. His spelling is better than that of a qualified registered Electrical Engineer of my acquaintance whose letters have more misspelled words than a high school freshman. Frank turned to Commander Fred Land and the Chief Mate of the ship.

"Fred, can you take the first one?"

"Yes, Frank," Fred replied. "You showed me this letter in San Francisco and I took the liberty to prepare myself. According to Bob Smith, chief compass adjuster for a firm at 465 California St., the mix in the compass bowl should be 45% pure grain alcohol and 55% distilled water, and further, if there is a black ring painted on the bowl it is this mixture, and if it is a blue ring then the bowl is filled with a special light oil. Smith told me all about this compass—when it was made, how to fill it without getting air in the liquid and how to adjust the expansion chamber which allows for temperature expansion without letting bubbles get in. If Dagoberto needs more information tell him to write in again."

Frank said, "Any comments?"

Mac McCoy grinned and remarked, "I've seen that formula somewhere before but seems to me that the mixture as given was then stirred in with equal parts of glycerin and a pinch of Juniper berry. You can buy it in any liquor store and can ask for compass juice or gin as you please."

Farran rapped the table. "For that you go to the foot of the class, Mac. Now Fred, can you also discuss No. 2."

"Yes. I brought along a 'Hand Book of Ship Calculations' by Charles H. Hughes, a prominent Naval Architect in the Eastern area of the United States. From reading the text it is clear that every architect has his own idea the same as you engineers do. I'll bet we do not get any better answers to the last two questions than I can dig up on this and the next one. He says that there is no fixed rule for figuring rudder areas. They have a term called 'lateral plane.' It is the ship's length times her draft in feet giving a plane area in square feet. This area is supposed to be larger than the area of the rudder in square feet by the following ratios for the several kinds of ships.

Cargo, single screw, unbalanced rudder	62 to 47
Same—balanced rudder	72 to 56
Passenger twin screw	67 to 50
Tugs and ferry boats	50 to 35

"The balanced rudder has 25% of its area forward of the stock."

Fred Land continued. "Now as to the question on the size of the anchor. The anchor, its chain, and the number of anchors are details which are specified by the Classification Society such as The American Bureau of Shipping for this country and for England there is the 'Lloyd's Register of Shipping,' and others. Each society has several volumes of rules for the construction of ships to class under its requirements. Depending on trade, waters, freeboard, and other factors besides tonnage, empirical formulae are given from which the ground tackle is selected. It is purely a rule of thumb process. The formulas themselves have some theoretical foundation but their principal justification lies in the fact that ships built in accordance with them have been satisfactory and successful ships. These rules are familiar to shipbuilders but not well known elsewhere. It will not be possible to answer this question without full knowledge of the ship, her intended use, and other factors. It would be almost as easy to specify the ship if you tell us the details of the anchor."

Mac McCoy laughed and from the side of his mouth wisecrecked, "These naval architects are like the ship's mates. They don't know so they keep their ignorance a secret. Well, why shouldn't they?"

Farran hammered the table again. "Mac, you have put your foot in it again. You have a bear trap mouth and a fly trap brain. Let's see you make no secret of your ignorance and tell us about the condenser and the propeller."

McCoy stammered. "Well—err—sure—eh what?"

"Please, Mr. Farran, may I discuss the condenser?" It was young George Cambell, third assistant engineer, who was taking a correspondence course in Mechanical Engineering and who always upset the conferences with his wild questions.

"Sure, George. You discuss it. You can do it, too, I know." McCoy spoke more kindly to George than he ever had before and showed great desire in getting the subject passed to George instead of himself.

"O. K., George. Let's have it, but make it brief. You have to go on watch in half an hour." Farran seemed pleased as secretly he had been teaching George a lot more than either of them realized.

"Well, sir, the size of the condenser is rated in square feet of cooling surface presented to the incoming vapor. Outside diameters of tubes are usually ⅝, ¾, ⅞ and 1 inch for which the length of the tube per square foot of surface will be respectively 6.112, 5.094, 4.367, and 3.816 feet. From this the number of tubes and length of condenser can be figured. Now with cold sea water and other favorable conditions it is possible to condense 15 pounds of steam to water per hour per square foot of surface. American Merchant Marine practice, however, is conservative and they use generally 7 pounds of steam per square foot of condensing surface."

"Considering the water rate of steam turbines, it is customary to allow about .9 to 1.25 square feet of surface per shaft horse power of the turbine, or from 6.5 to 8 pounds of steam condensed per hour per square foot of surface. A triple expansion three or four cylinder vertical marine steam engine will do almost as good in steam consumption as the turbine under the same steam conditions. From 1 to 1.5 square feet of surface is good for each shaft horse power. So now, knowing the engine, we can lay out the condenser."

Farran broke in on this long narrative. "Well, George, that's all good book learning but I am afraid it is not quite that easy. In the old days when the shipyard built the condensers as well as all other parts of the ship, perhaps so, but nowadays there are several manufacturers of condensers who make a specialty of this unit and the condenser will be rated by the pounds of steam it will condense at a specified vacuum and at a specified rate of sea water flow not above a certain temperature. This gives them a chance to reduce the size and weight of the unit by special features, such as layout of the tubes and higher velocities, to effect higher heat transfer rates and so on. Again we must refer the question to the specialists and they will not answer it unless we first tell them all about the engine and the steam and water conditions. And again I am sure their data is based on hundreds of

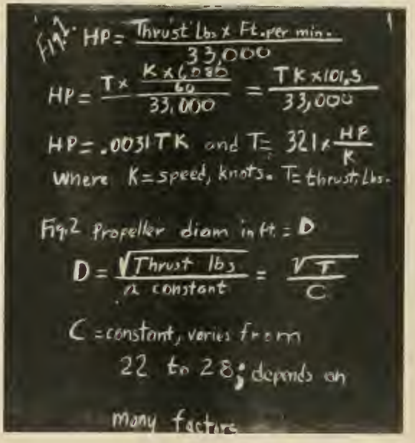


Fig. 1
HP = Thrust Lbs x Ft. per min. / 33,000
HP = T × (K × 6,080 / 60) / 33,000 = TK × 101.3 / 33,000
HP = .0031 TK and T = 321 × HP / K
Where K = speed, knots. T = thrust, Lbs.
Fig. 2 Propeller diam in ft. = D
D = √Thrust lbs / a constant = √T / C
C = constant, varies from
22 to 28; depends on
many factors

Figures 1 and 2.

(Please turn to page 97)

With the Port Engineers

February Meeting, S. F. Society

D. J. Richards and F. J. Bader, of the Western Division, Combustion Engineering-Superheater, Inc., snapped at the February meeting of the San Francisco Port Engineers.

March Meeting, S. F. Society

Preceding elaborate demonstrations at the Westinghouse Emeryville plant (which will be covered at length in April issue), the San Franciscco Society met at Angelo's Restaurant.

Head table photo shows Program Chairman Marshall Gerlinger; President Ira Chapman; Westinghouse Plant Manager E. S. Holt; Engineer G. H. Sandal; Chas. H. Johnson, Chief Engineer, Combustion Engineering; and D. J. Richards of Combustion Engineering.

Pacific MARINE REVIEW

Membership Roster Society of Port Engineers Los Angeles-Long Beach

NAME	AFFILIATION	ADDRESS
Anderson, William (H)	Keystone Shipping	1015 Chestnut St., Philadelphia, Pa.
Atkinson, T. C. (AM)	Wilmington Engineering Co.	P. O. Box 666, Wilmington
Barton, R. B. (AM)	General Electric Co.	6800 Stanford Ave., L. A.
Black, John R. (H)	American Bureau of Shipping	106 E. "F" St., Wilmington
Bradford, George A. (M)	Time Oil Company	1323 Beech Ave., Torrance
Campbell, R. R. (AM)		6 Saddleback Rd., Rolling Hills
Cootes, Travis (M)		2115 Averill St., San Pedro
Cordes, Fred (M)	Deconhil Shipping Co.	305 N. Avalon Blvd., Wilmington
Curran, George W. (M)	American Pacific S. S. Co.	365 W. 7th St., San Pedro
Cyrus, R. H. (M)	Union Oil Company	Drawer 846, Wilmington
Deckart, S. (AM)	American Bureau of Shipping	106 E. "F" St., Wilmington
Dennis, Joe (AM)	Craig Shipbuilding Co.	Long Beach
DeRochie, Dave (H)	Pacific Marine Review	8943 Wilshire Blvd., Beverly Hills
Dobler, Dan (M)	The Texas Company	P. O. Box 755, Wilmington

Duggan, C. T. (M)	American Pacific S. S. Co.	365 W. 7th St., San Pedro
Flaig, P. F. (AM)	General Electric Company	1017 E. 66th Way, Long Beach
Folks, Jack C. (AM)		746 Ridgeley Dr., Los Angeles
Gaudin, Paul V. (M)	American Pacific S. S. Co.	365 W. 7th St., San Pedro
Gordon, Spencer (AM)		937 Dodson St., San Pedro
Gulvin, Glenn (M)	American Pacific S. S. Co.	365 W. 7th St., San Pedro
Hale, Bert L. (M)	Marine Solvents Service Corp.	1339 Sepulveda St., San Pedro
Hicks, R. J. (M)		4521 Graywood Ave., Long Beach
Hoxie, George H. (M)	American President Lines.	Berth 155, Wilmington
Jackson, C. I. (AM)		2539 E. 3rd St., Long Beach
Jones, Ray (M)	General Petroleum Corp.	4301 E. 3rd St., Long Beach
Kelly, M. H. (M)	Richfield Oil Corp.	1400 W. 7th St., Long Beach
Kennedy, Lloyd L. (H)	U. S. Coast Guard	2009 Averill St., San Pedro
Lyke, Dayle W. (AM)	General Electric Co.	10300 McNerney Ave., South Gate
Markey, Ed (M)	Union Oil Company	Drawer 846, Wilmington
McCoy, George H. (AM)	Marine Solvents Service Corp.	2427 Pine Ave., Long Beach
McDonald, J. O. (M)	General Petroleum Corp.	Box A, Terminal Island
Miller, Harry (AM)	Forster Shipbuilding Co.	1253 Sunside St., San Pedro
Neergaard, Hampton (M)	Burns S. S. Co.	Box 247, Wilmington
Newton, Edsel (H)	Long Beach Press Telegram	6th and Pine Ave., Long Beach
Peterson, C. V. (M)	The Texas Company	1350 N. Island Dr., Long Beach
Pike, F. W. (AM)	American Bureau of Shipping	286 Ravenna Dr., Long Beach
Reed, Carl (M)	Richfield Oil Co.	1400 W. 7th St., Long Beach
Richards, Walter C., Sr. (AM)		432 W. "C" St., Wilmington
Robinson, G. A. (M)	Long Beach Marine Repair Co.	1409 W. 7th St., Long Beach
Shipley, Paul (AM)	Westinghouse Electric Co.	600 St. Paul Ave., Los Angeles
Simms, L. (AM)	P. Banning Young	810 N. Fries Ave., Wilmington
Sniveley, C. P. (AM)		P. O. Box 204, Wilmington
Spurk, J. S. (AM)	General Electric Co.	6800 Stanford Ave., Los Angeles
Stakeman, R. L. (M)	Pacific Far East Line	Pier A, Long Beach
Sullivan, Ray C. (AM)		1807 E. Olympic Blvd., Los Angeles
Summers, Harry J. (H)		1217 So. Leland St., San Pedro
Wosser, J. L. (M)	Matson Steamship Co.	626 Prospect St., Honolulu T. H.

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American President Lines
George H. Hoxie

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Carl Reed

The Texas Company
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Time Oil Company
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Union Oil Company
R. H. Cyrus
Ed Markey

Army Transport

(Continued from page 55)

1917, it was renamed the *Madawaska* and was used in service to and from France and in the Czech evacuation from Siberia. In 1921 the Army took it over. Princess Cantuzene, a grand-daughter of President U. S. Grant, presided at its third christening in 1922, when the Army named it for the Civil War leader. For the next 19 years, except for an overhaul and modernization job at Mare Island, the *Grant* hauled Army passengers on a circuit that touched San Francisco, Honolulu, Guam, Manila, Chingwangtao (Taku Bar), Shanghai, Panama and New York. In 1941 the *Grant* was transferred to the Navy and was used through World War II chiefly on runs from Seattle to Alaska and Honolulu, although once it went as far as Okinawa. Returned to the Army in 1946, it was placed in the laid-up fleet at Seattle, where it remains today.

Of almost equal fame was another one-time German liner which originally was known as the *President Grant,* a source of some confusion, but which gained its greatest glory as the *Republic.* This 615-foot German transatlantic ship, acquired in 1917, made 20 voyages under Navy control to and from Europe in World War I and participated in the Czech evacuation before being laid up. United States Lines acquired the ship in 1924 and operated it seven years. The Army then took it over and used it chiefly on a triangular run between New York, Honolulu and San Francisco. In 1941 it, too, passed to the Navy which used it in the Pacific, principally between San Francisco and Hawaii, until 1945 when it went back to the Army for conversion as a hospital ship. On its maiden voyage in the new capacity, the war in the Pacific ended. The *Republic* went to Manila, removed its Geneva convention markings, and picked up troops at Leyte for return home. Later it was decommissioned and laid up at Seattle. On one of its prewar voyages the *Republic* carried the remains of Father Damien, heroic padre of the lepers, from Hawaii to Panama.

Closest to the hearts of the Army sailors, however, is a much smaller vessel, the tug *Slocum.* The sturdy little sea bulldog saw service in three wars before she piled up and sank off the foggy Alaska coast in the last war. Captain Albert Berry, veteran Marine Superintendent of the San Francisco Port of Embarkation, who once commanded the *Slocum* treasures its brass nameplate as his most valued memento of his 31½ years of Army seafaring.

Six other Army operated troop ships also saw service in both world wars. They were the *Charles A. Stafford,* originally the *Siboney*; the *Edmund B. Alexander,* formerly the *America*; the *Etolin,* which was the old

(Please turn to page 68)

Well-remembered transports mentioned in the article. Top to bottom: The "Sherman," the "Buford," the "Logan," and another picture of the "Logan" at the Fort Mason docks around 1920.

Pacific WORLD TRADE
Reg. U. S. Pat Off.

Current World Trade Data

The following current information concerning trade with foreign countries is quoted from the Foreign Trade Bulletin of the American National Bank of Chicago through the courtesy of A. M. Strong, vice president. Complete details regarding any matter mentioned can be obtained from their Foreign Department. While the data has been compiled from sources which they consider reliable, it is disseminated without responsibility on their part.

Brazil

Banco Do Brazil announced that it will consider proposals for barter operations for the exportations of the following products: carnauba wax, caroa cocoa, erva mate hides, nuts, sisal, tobacco and wood. Barter operations with countries of scarce currencies (U. S.) will be considered when the product does not have an established market in the particular country.

It is reported that collection conditions in Brazil have improved considerably. Unpaid American exports at the end of January amounted to $78,000,000. Delays in the remittance of American dollars now average about three months for preferential category, about four months for first category and about a year for fourth category. There are about 38,000 accounts still unpaid.

Korea

On December 25, 1949, the Korean Ministry of Commerce and Industry announced new lists of approved exports and imports to replace earlier lists.

There are no radical changes in the new lists, but the import list has been expanded to include ECA programmed items and items programmed for import from Japan under the trade plan between the two countries. The export list has been brought up to date by specifically referring to commodities not previously listed separately. These include such commodities as bamboo ware, fish-liver oil, pig bristles, carpets, and parasols.

Mexico

The Mexican Presidential Order which last December 24 designated a quasi-official Government agency as the sole importer-exporter of all products under import or export control in that country has been revoked, according to information received by the Office of International Trade, U. S. Department of Commerce.

This means that import and export permits will now be granted in Mexico to private concerns under the same procedures used prior to December 24. It is expected that the quasi-official Government agency (known as CEIMSA) will continue its previous activities, which consisted of importation into Mexico of foodstuffs in short supply, the marketing of surplus agricultural products, and barter transactions.

Philippines

Sight drafts drawn in 1949, as well as letters of credit, may be used as a basis for calculating the 6 per cent monthly allotment of exchange which Central Bank agents may sell to their customers for payment of import bills under letters of credit issued after January 7, for articles not subject to import controls, according to an amendment dated January 18 of Central Bank Notification No. 10.

In detail, the amendment provides that an agent of the Central Bank may sell foreign exchange for payment of import bills to a customer resident or located in the Philippines, who in 1949 had obtained letters of credit from the agent or for whom the agent had received for collection D/P and D/A drafts. It is further provided that the aggregate amount of letters of credit issued in a calendar month may not exceed 6 per cent of the total amount of all letters of credit issued to and used by a customer in 1949, plus all D/A and D/P drafts drawn on the customer and received for collection in 1949. A parenthetical statement in the amendment explains that letters of credit may be issued in any one month up to the 6 per cent allotment for that month plus any unused portions of the allotment for the two immediately preceding calendar months. The allotment, however, may not be used in advance.

Exchange for imports during March and April will be available on the same basis as for January and February, namely 6% per month of the total amount of all credits and drafts of 1949. Unused portions of exchange licenses for imports during January and February will be added to the exchange allocation for the next period.

Portuguese India

American firms exporting to Portuguese India should require importers to open irrevocable letters of credit, as otherwise, there may be considerable delay in obtaining payment, according to an airgram of January 7, 1950, from the American Consulate in Bombay, India.

The granting of an import permit by the customs authorities in Goa does not necessarily mean that the foreign exchange will be released.

Sweden

Sweden's import surplus for 1949 was only 73 million kronor (about 14 million dollars) in 1948, imports exceeded exports by 966 million kronor and in 1947, by 1,980,000 kronor. An excess of imports over exports has prevailed in Sweden for 100 years and the deficit has been considerably higher than it was in 1949.

The Swedish Government has announced that import licenses totaling somewhat more than 360,000,000 crowns, ($69,000,000,) covering imports from dollar sources will be issued during the first half of 1950, according to a dispatch dated January 19, 1950, from the American Embassy in Stockholm. It adds that unless unforeseen developments occur a similar amount will be made available during the second half of the year, bringing the annual total to approximately 725,000,000 crowns. This total compares with an estimated 500,000,000 crowns in 1949, 1,700,000,000 in 1948, and 2,800,000,000 in 1947. However, in view of the 30.5 per cent

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COMPARISON OF CREDIT AND COLLECTIONS INDEX FIGURES

(Based on Surveys on Credit and Collection Conditions in Latin America)

	Credit Conditions			Collections		
	January 1950	July 1949	January 1949	January 1950	July 1949	January 1949
ARGENTINA	179	177	190	12	10	18
BOLIVIA	227	239	228	78	83	61
BRAZIL	181	176	190	19	18	20
BRITISH POSSESSIONS	283	286	284	87	90	91
CHILE	198	216	192	49	56	41
COLOMBIA	223	182	192	45	36	39
COSTA RICA	180	180	190	30	30	31
CUBA	289	291	293	90	92	95
DOMINICAN REPUBLIC	289	291	291	90	92	94
ECUADOR	260	250	249	79	80	69
FRENCH POSSESSIONS	282	278	280	85	87	92
GUATEMALA	256	248	276	80	79	92
HAITI	289	291	290	90	92	93
HONDURAS	221	215	235	58	55	78
MEXICO	274	254	258	83	82	90
NETHERLANDS POSSESSIONS	275	252	276	83	80	90
NICARAGUA	264	285	288	81	92	89
PANAMA	289	291	293	90	92	95
PARAGUAY	197	218	211	49	71	51
PERU	223	190	198	47	46	42
PUERTO RICO	270	280	281	80	85	90
EL SALVADOR	217	214	248	60	55	78
URUGUAY	214	212	241	53	44	56
VENEZUELA	258	251	268	76	80	88

CREDIT—GOOD: 250 and up. Lowest percentage 50% good, 50% fair.
FAIRLY GOOD: 225 to 250. Lowest percentage 25% good, 75% fair.
FAIR: 200 to 225. Lowest percentage 100% fair.
POOR: 175 to 200. Lowest percentage 75% fair, 25% poor.
VERY POOR. Below 175.

COLLECTIONS—PROMPT: Over 70% prompt or fairly prompt collections.
FAIRLY PROMPT: 50% to 70% prompt or fairly prompt collections.
SLOW: 40% to 50% prompt or fairly prompt collections.
VERY SLOW: Less than 40% prompt or fairly prompt collections.

Jr. Foreign Trade Association of Southern California

FEBRUARY MEETING

The Junior Foreign Trade Association of Southern California held its annual Installation Banquet February 10th with the following installed as officers: President—George M. Shutes, American Airlines; Membership Chairman—Frank C. Jones, Pacific Far East Lines; Program Chairman—Robert C. Elliott, Santa Fe Railway Co.; Treasurer—Charles G. Weidemann, Citizens National Trust & Savings; Publicity Chairman—William F. Diss, Transmarine Navigation Corp.; Attendance Chairman—Ray K. Hovard, General Steamship Corp.; Educational and Special Projects Chairman—Richard Nevins, Marsh & McLennan; Historian—Howard S. Larkin, Moore McCormack Lines.

Rene A. Dussaq gave an entertaining talk about his escapes and experiences during World War II as an OSS captain behind the German lines. Born in Buenos Aires where his father was in the diplomatic service, he crossed the Atlantic 14 times before he was 18, was a member of the world championship Olympic rowing team, and held interclub Swiss and Cuban tennis championships. A member of the French underground during World War II, he was discharged as the second most decorated soldier.

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Clayton E. Roberts
Alberto Martinez, Jr.

At the February meeting of the Junior Foreign Trade Association of Southern California.

Top: Bob Ryan, Chairman of the Board of the Society; Rene Dussaq, special agent, Prudential Insurance, speaker of the evening; George Shutes, American Air Lines, newly elected President; Frank Jones, Pacific Far East Lines, who introduced the speaker.

Bottom: Richard Adcock, Bank of America; James E. Bell, Pacific Far East Line; Robert Moss, Carnation Co.; J. E. Bertolette, Carnation Co.; Harry Regen, Pacific Far East Line; Arturo Banuellos, International Expediters; Charles L. Prince, Pacific Far East Line.

Director of European Imports Of ECA Financed Commodities

A directory of European importers of ECA financed commodities has been published by the Office of Small Business of the Economic Cooperation Administration. The directory is in three volumes and contains the names and addresses of importers and the products in which they deal.

Volume one of the directory includes importers dealing in: food, feed and fertilizer; fuel; miscellaneous and unclassified products. Raw materials and semi-finished products are covered in volume two. The directory's volume three contains importers who deal in machinery and vehicles.

The importers listed are only those whose transactions were completed under ECA financing during May, June and July 1949, and who may be considered representative of the importers having participated in this trade since the inception of the European Recovery Program.

The directory may be consulted at the local Chamber and copies can be obtained by writing to the Office of Information, Room 405, Economic Cooperation Administration, 800 Connecticut Avenue, N. W., Washington 25, D. C.

Potential overseas markets may also be sought in "Foreign Trade Tips," published monthly in the International Bulletin of the San Francisco Chamber of Commerce. Sample copies are available at the Chamber's office, 333 Pine St., San Francisco.

Philippine Imports To be Limited to Dollar Income

The American Embassy in Manila advises the Dept. of Commerce that the Philippine cabinet has approved a recommendation to limit disbursement of dollars for imports in 1950 to actual receipts of dollars from exports, from U. S. payments and expenditures in Philippines, and from other inward remittances. It has also approved a list of priority items in allocation of dollar exchange. It has also been reported by the Manila press that the Philippine Congress is giving consideration to a proposal that all imported articles not under import quota restrictions would require import permits.

UNDERWRITERS of INSURANCE for SHIPOWNERS and CHARTERERS

HULLS

PROTECTION AND INDEMNITY

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MARINE OFFICE OF AMERICA

116 John Street, New York 7, New York

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140 Sansome Street
San Francisco 4, Calif.

Northwestern Department:
Paul A. Carew, Manager
Colman Building
Seattle 4, Washington

Service Offices:
530 West Sixth Street
Los Angeles 14, Calif.

411 Yeon Building
Portland 4, Oregon

Miles York Advances

Miles F. York

Miles F. York of San Francisco was recently elected to the Board of Trustees of the Atlantic Mutual Insurance Company, and a director of its affiliate, the Centennial Insurance Company, both with headquarters in New York. York is vice president of both companies in charge of the Pacific Division. In 1922 York joined the marine insurance department of the Fireman's Fund Insurance Company at the head office in San Francisco. He went to New York as assistant manager in that company's eastern division in 1942, and remained in that capacity until he joined the Atlantic organization in 1945.

World Trade Data

(Continued from page 64)

currency devaluation in September 1949, the amount of dollar exchange to be allocated in 1950 is actually about the same as in 1949.

The Swedish dollar import plan, which takes into consideration actual and anticipated ECA assistance, allocates about one-third of the total amount for petroleum products, and the remainder is to cover machinery, chemicals, metals, cotton, tobacco, and a few consumer items unobtainable for reasonable prices from other sources.

Germany

The German Import Committee has approved procurement from American suppliers totalling more than four million dollars covering a variety of commodities, including the following: Machine Tools, $1,500,000. Textile Machines, $1,000,000, Miscellaneous Machines, $500,000, Asbestos, $300,000, Molybdenum Concentrates, $258,000, Rasorite, $245,000, Essential Oils, $200,000, Electronic Heating Aids and parts $100,000. Additional information can be obtained by communicating with the Secretariat of the German Import Committee, McNair Barracks, Frankfort-Hoechst, Germany.

The purchase of $8,655,000 of various commodities has been approved by the German Import Committee under the ECA program. Commodities involved, include tobacco, copper, tin, hides and skins and industrial diamonds.

The 27,000-Ton Supertanker

(Continued from page 39)

ator sets, each driven by a 230 volt D.C. motor and delivering 5 KVA, 120 volts, single-phase, 60 cycles, with 80% power factor, for navigation equipment. The M-G sets are G.E. make.

The three generators, switchboard, and M-G sets are located on the generator flat on the port side of the engine room.

Evaporators

The evaporating and distilling plant is of Foster-Wheeler make and is located at the forward starboard corner of the engine room, convenient to the operating platform. It consists of two low-pressure units, and is arranged for automatic operation. Each unit when operating in single effect will produce 6,000 gallons per day of distillate, when supplied with 2,300 pounds of saturated steam per hour at 7.5 p.s.i.a. When operating as a double effect plant, it will produce 6,000 gallons per day when supplied with 1,280 pounds of saturated steam per hour at about 7.5 p.s.i.a. This is based on clean tube conditions, and a brine density of 1.5 thirty-seconds. The distillate is to contain not more than 0.25 grain per gallon. Under emergency conditions the plant, operating double-effect, will produce 12,000 gallons per day when supplied with 2,780 pounds of saturate steam per hour at 20 p.s.i.a

The evaporator feed and circulating pump is centrifugal, of Worthington make, 300 GPM against 40-foot head at 1,750 RPM, driven by a 10 H.P. motor, G.E. The main circulator also discharges to the evaporators and a standby connection is also provided from the general service pump, through an orifice plate. For evaporating raw fresh water, the small (auxiliary) boiler feed pump can be used for evaporator feed. The two evaporator brine pumps, centrifugal, are of Dean make, 12 GPM against 70-foot head at 1,700 RPM, with a 2 H.P. motor, G.E. The two evaporator distillate pumps, centrifugal, are of Dean make, 6 GPM against 100-foot head at 1,750 RPM, with a 2 H.P. motor, G.E. Starch feed treatment is provided.

Feed System

The boiler feed heating is very simple, representing practically single-stage heating. The condensate pumps discharge through the Davis grease extractors and the inter and after condensers of their respective air ejectors, and through the gland drain condenser, to the deaerating feed water heater. The main feed pumps draw from the deaerator and discharge through the main or auxiliary feed line to the economizers.

There are three centrifugal main feed pumps, of Coffin make. Each is rated at 350 GPM against 750 p.s.i.g. head, at 7,150 RPM, and is direct-driven by a turbine taking steam at 525 p.s.i.g. and 525° F. and exhausting at 10 p.s.i.g. back pressure.

An auxiliary feed pump is also provided, Worthington make, 2¼" x 4" vertical triplex plunger type, 30 GPM against 750 p.s.i.g. head at 150 RPM, gear-driven by a G.E. motor, 20 H.P., at 1,750 RPM. This is intended mainly for use in filling the boilers and raising steam. (Provision for cold-starting is made by a diesel fuel supply line to the fuel service pumps).

The deaerator is of the direct contact feed water heater type, Worthington make, having a capacity for heating and deaerating 137,260 pounds of feed water per hour when supplied with 20,240 pounds of steam per hour at 10 p.s.i.g. The total heater capacity is 157,500 pounds per hour. The outlet temperature is 240° F. The deaerator is located at the after end of the engine room, at the poop deck level.

Refrigeration

The cold storage rooms for ship's stores are on the upper deck aft. The meat room and chill room each have a capacity of 1,935 cubic feet. The insulation on six hulls is of cork and mineral wool; on the seventh hull it is to be of Foamglass.

There are two main refrigerating machines, freon type, each of 3.26 ton capacity, 1,750 RPM, driven by a 10 H.P. motor. Their circulating pump is 25 GPM, 100 p.s.i.g head, 1,750 RPM, with a one H.P. motor, G.E.

The design of the plant and insulation is intended to maintain a temperature of 35° F. in the chill room and 0° F. in the meat room, and to provide for a temperature rise of not more than 9° F. in 6 hours in either room (empty) after the plant is shut down, with an ambient temperature of 100° F.

The chill room is provided with a 60-gallon scuttle butt and a deodorizer. The meat room contains ice-making trays.

There are two compressor units, each of 0.15 ton capacity, air cooled, with ½ H.P. motor, serving two refrigerator boxes of 8 cubic feet each, one in officers' pantry aft and one in crew's mess. These boxes are in lieu of the domestic type refrigerators.

The compressor units and accessories are of Carrier make. The machines are located in the steering gear room. Controls are automatic.

There is an identical 0.15 ton compressor unit in the midship fan room and refrigerator box in the officers' pantry amidships.

Miscellaneous Auxiliaries

The characteristics of the motor-driven auxiliaries (other than those described above) are shown in the accompanying table. The motors included in this tabulation are all 230 volts D.C. and are of G.E. make excepting the ventilation fans for the quarters, which units are furnished by Wing and Ilg. The fan units for engine and boiler room ventilation are axial-flow type.

The fire and butterworth pump is Worthington, horizontal, centrifugal, rated at 400 GPM against 125 p.s.i.g. at 1475 RPM, and 360 GPM against 200 p.s.i.g. at 1750 RPM. It is driven by a Whiton turbine taking steam at 585 p.s.i.g. and 790°F. and exhausting at 10 p.s.i.g. back pressure.

The fuel transfer pump and bilge and ballast pumps in forward pump room are each 12" x 8½" x 12" vertical duplex pot valve type, National Transit make, rated at 400 GPM against 125 p.s.i.g. at a piston speed of 70 feet per minute. They take steam from the deck steam line at about 125 p.s.i.g and exhaust to the deck exhaust

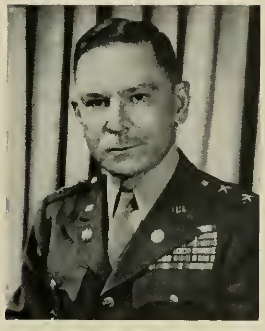
(Please turn to page 80)

Army Transport

(Continued from page 62)

Matsonia; the *George Washington*; the *H. F. Alexander*, also known as the *George S. Simonds* and the *Great Northern;* and the *Orizaba.*

Other well known ships sailed by the Army in World War II included the *Acadia, Thomas Berry, Imperial, Maui, Leonard Wood, President Buchanan, Puebla, Tasker H. Bliss, Willard Holbrook, Saturnia, Hugh L. Scott, Thistle, Sea Barb, Sea Cat,* and six C-3 transports built by and for the Army during the war, the *Goethals*, the *Gibbons*, the *Shanks*, the *Ainsworth*, the *Funston* and the *O'Hara*. The famous *Hermitage* also made one trip under the Army house flag.



General Heileman, Commanding General, Army Transportation Corps, Washington.

The largest vessel to carry the ATC red and gold banner was the *George Washington*, a 721-foot Hamburg-America Line vessel acquired in World War I and assigned to the Army in 1942.

The growth of the Army fleet under the world-wide requirements of World War II was gargantuan. From a nucleus of eight ships, two of them freighters, the service expanded to an armada of 1706 vessels of over 1,000 gross tons, 261 of them passenger transports, operating under the Army by July 31, 1945.

There were at that time 620,355 troop spaces under Army control. In November of that year, during the great rush to bring war veterans home, troop spaces directly controlled by the Army, allocated to it by the Navy, and augmented by two British liners totalled 1,300,000.

As soon as troop movements had become stabilized in 1946, the Transportation Corps started building its postwar fleet to meet peacetime requirements. Efficiency, economy and comfort were the standards on which the ATC planners based their acceptance and rejection of the tremendous pool of vessels available.

As the fleet finally evolved, it consisted of eight P-2 transports of the Admiral class, built at Alameda, Calif.; a varying number of C-4's of the General class, constructed at the Kaiser yards in Richmond, Calif.; the six C-3's built for the Army during the war; and a number of miscellaneous vessels of various war-period designs. In addition a fleet of cargo carriers, chiefly Victory types, was developed to meet the Army's special needs, although better than 80 per cent of its cargo was handled commercially.

The selected passenger carriers were given immediate conversions to reduce their troop capacities and provide more space for cabins for women and children passengers. They were also given safety-at-sea conversions to bring them up to and beyond Coast Guard safety standards. Finally seven of the P-2's underwent final conversions which placed them on a par with most commercial liners in modernity, comfort and commodiousness, although not in luxuriousness. These were the USAT's *Generals Daniel Sultan, Edwin Patrick, Hugh Gaffey, Simon Buckner,* and *William Darby,* home-ported at the San Francisco Port of Embarkation, and the USAT's *Generals Alexander Patch* and *Maurice Rose,* sailing out of New York Port of Embarkation. They are 608 feet, 11 inches long, with a top speed of over 21 knots and a cruising range of 15,000 miles. As currently fitted they accommodate approximately 430 cabin and 1,000 troop class passengers; in wartime they carried as many as 5,000 troops. These conversions, costing millions of dollars, were accomplished in private shipyards on both coasts.

On completion of the reconstruction program the Army had a fleet of modern, efficient transports fitted not only to carry on the postwar mission of linking occupation areas with the homeland but also to provide an immediate response to any emergency that might arise.

Manning this fleet are civilian employes, Civil Service seamen who have a record of accomplishment and loyalty as high as that of the ships they sailed. Among them are men known on both coasts for their seamanship, some of them veterans of over 30 years of Army transport service.

Of 160 civilian employes of the San Francisco Port of

(Please turn to page 84)

Major General James A. Lester,

Commanding General, San Francisco Port of Embarkation

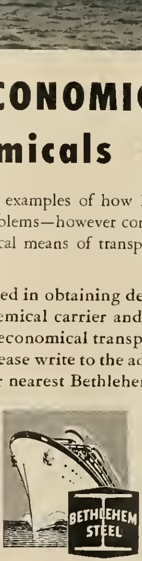
Chemical carrier Marine Chemist after conversion by Bethlehem. Inset shows a filling and discharge station on the R. E. Wilson, another Bethlehem conversion.

Conversions by Bethlehem

Sea-Going Carriers for ECONOMICAL ransportation of Liquid Chemicals in Bulk

ılehem's leadership in the conversion of sea-going ers to modern chemical carriers is one of the many nples of Bethlehem's ability to meet the specific require- ts of the individual operator or an entire industry ugh the transformation of already existing facilities. ı demand for plastics ever increasing, the chemical stry was faced with the problem of transporting— ıomically, swiftly and safely—bulk shipments of caustic , glycols, solvents and other organic compounds from ıary sources of supply to the major distribution areas. ıplicating factors included necessity for preventing con- nation and solidification of cargoes in shipment, for iding separate pumps and pipe lines for a wide variety roducts, and for developing tank linings which would t chemical action. Solution of these problems in the ersions of the *Marine Chemist* the *R. E. Wilson* represent excellent examples of how Bethlehem can help you solve your problems—however complex—of obtaining the most economical means of transporting bulk cargoes by water.

If you are interested in obtaining detailed information regarding the chemical carrier and other waterborne craft suitable for economical transportation of special liquid cargoes, please write to the address listed below or inquire at your nearest Bethlehem Yard.



SHIP REPAIR YARDS

Boston Harbor	New York Harbor
Baltimore Harbor	Beaumont, Texas
Los Angeles Harbor	San Francisco Harbor

SHIPBUILDING YARDS

Quincy, Mass.	Staten Island, N. Y.
Sparrows Point, Md.	Beaumont, Texas
Terminal Island, Calif.	San Francisco, Calif.

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BETHLEHEM STEEL COMPANY

Shipbuilding Division

General Offices: 25 Broadway, New York 4, N. Y.

On the Pacific Coast shipbuilding and ship repairing are performed by the Shipbuilding Division of Bethlehem Pacific Coast Steel Corporation

Running Lights

Radar In Dramatic Sea Rescue

Radar's contribution to safety of life at sea and its value as a navigating aid through fog and darkness were dramatically demonstrated recently when a modern Radiomarine Corporation of America 3.2-centimeter unit aboard the *SS Stockholm*, flagship of the Swedish-American Line, enabled the ship's officers to locate and proceed to the rescue of a burning Danish mail boat, the *Kronprins Olav*.

The mail boat caught fire in the early hours of darkness before dawn on February 20. She was in Kattegat Strait, off the Swedish coast, on her way to Copenhagen from Oslo, Norway.

According to accounts of the fire and rescue published abroad, "passengers told of terrifying scenes as the fire spread in the dark. Half-dressed men and women took to boats in fog lit by leaping flames."

In response to the *Kronprins Olav's* frantic SOS call, the *Stockholm's* officers singled out the burning vessel on the large 12-inch viewing scope of its Radiomarine radar and proceeded to navigate through waters cluttered with fishing vessels, in a dense fog, until 108 of the passengers and crew had been rescued.

Of several vessels that tried to reach the *Kronprins Olav*, the radar-equipped *Stockholm* was the only one that succeeded. The others were forced back by the fog.

Port of USC, Propeller Club

The Port of the University of Southern California, Propeller Club of the United States, now boasts sixty-one active members. Chartered in 1945, the Port became inactive when its members, who were attending the University with the Navy programs, graduated en masse.

Reactivation of the Port was brought about in October 1949. Stewart M. Angle, a leader in the reorganization, was appointed President by the national headquarters. Michael McGowan was elected First Vice President and Wayne Inman, Secretary-Treasurer, at the December 1st meeting.

Thirty-eight members of the Port of U.S.C. recently toured Matson Navigation Company's *Lurline*. President Angle introduced two guests from the Senior Port, James Young of the Los Angeles Chamber of Commerce and Alvin Allyn of the Marine Solvents Corporation, who, along with R. J. Chandler of the Matson Lines, planned and arranged the trip.

John H. Kelley snapped this picture of the Port of the University of Southern California, Propeller Club, on a tour of the "Lurline."

Fairbanks, Morse men pictured at their January sales meeting. Center front is R. H. Morse, Jr.; next to him is Roger Murray.

Fairbanks Morse Meeting at San Francisco

Fairbanks, Morse & Co. held a sales meeting in January at the Clift Hotel, San Francisco, for San Francisco, Portland and Los Angeles branch house salesmen, department managers and factory engineers. Officials present from the company headquarters were R. H. Morse, Jr., Vice President and General Sales Manager; R. W. Lewis, Manager of General Dealer Sales; P. Kleumpers, Assistant to R. W. Lewis; and L. A. Harlow, Advertising Manager. Representatives from the Westco Works in St Louis, Missouri, were W. H. Tinker, Chief Engineer, and G. Molly, Assistant. Branch Managers attending were Howard Oxsen, (then of Portland, but now of San Francisco), A. M. McLaren, Manager of the Los Angeles branch, and C. Spaulding, Sr., of the Refinite Sales Company. Roger M. Murray of San Francisco was Host Manager.

Equipment displayed during the meeting included water softeners, washing machines, mangle ironers, gasoline engine driven lawn mowers, piston pumps, all types of ejector pumps and self-priming centrifugal pumps.

Green New President of American Bureau

Officers elected at the 88th annual meeting of the Board of Managers and members of the American Bureau of Shipping in January were:

President, Walter L. Green, who succeeds J. Lewis Luckenbach. Luckenbach served the bureau as exective vice president and president for the last 22 years. He was elected chairman of the board of managers.

Honorary Vice Presidents, Joseph W. Powell and William D. Winter.

Vice President, David P. Brown, to succeed Green.

Secretary-Treasurer, Jerome B. Crowley, and Assistant Secretary-Treasurer, Kenneth D. Hull.

To the Board of Managers:

For the three-year term expiring January 1953: James A. Farrell, Jr., John M. Franklin, George H. French, John T. Hutchinson, Harold Jackson, Willard F. Jones, Charles Kurz, Frederick B. McBride, Joseph A. Moore, Jr., John D. Reilly, H. Harris Robson, Daniel D. Strohmeier, Alexander T. Wood.

For a one-year term expiring January 1951: Robert G. Dunlop.

Green had been Vice President of the Bureau since January 1947 when he rejoined the Bureau after a period of participation in the war shipbuilding effort. He resigned from the American Bureau in 1939 to associate himself as Vice President with the Seattle-Tacoma Shipbuilding Company, a Todd Shipyards Corporation affiliate, and later was transferred to the New England Shipbuilding Corporation of the Todd group as Vice President and General Manager. He started his career in the shipping industry in 1913 with the Luckenbach Steamship Company, continuing with them on both the Atlantic and Pacific coasts until 1937 when he resigned to join the American Bureau.

Walter L. Green

Radiomarine Appoints New Sales and Service Agents in Hawaii

Signing contracts appointing Pacific Recording Co., Ltd., of Honolulu, sales and service agent of Radiomarine Corporation of America. Left to right: George F. Shecklen, Executive Vice President of Radiomarine; Baron Inaba, Pacific Recording; Charles A. Allen, President of Pacific Recording; George Blackmore, Assistant District Manager, RCA Communications, Honolulu; Reginald Goring, District Manager, RCA Communications, Honolulu.

The appointment of Pacific Recording Company, Ltd., 691 Auahi Street, Honolulu, as the Hawaiian Islands sales and service agent of the Radiomarine Corporation of America, was announced by George F. Shecklen, Executive Vice President.

Pacific Recording Company has been established for several years as specialists in the sales and servicing of sound equipment. It will service all Radiomarine radio and electronic equipment on vessels which operate in, or pass through, that area. As a Radiomarine authorized dealer, Pacific Recording will also promote the sale of Radiomarine equipment in the Hawaiian Islands.

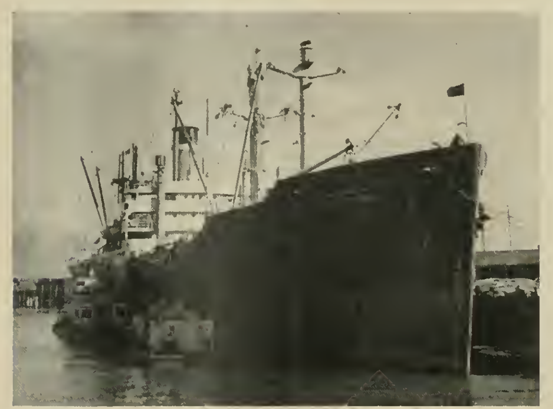
This new appointment enlarges Rariomarine's service facilities in the Pacific area. The company also maintains service depots at Wilmington, Calif., San Francisco, Seattle and Portland, in addition to its many depots on the Atlantic and Gulf Coasts, Great Lakes and Mississippi River.

Wagner & Niehaus Overhaul "Merrell"

One of the last of the Army transports to be overhauled under the jurisdiction of the Army was the *"Pvt. Joseph F. Merrell."* The work was done by Wagner & Niehaus at San Francisco, and consisted of the repair of many engine room motors, opening and cleaning of gear bearings and lube oil flushing of main reduction gear and both main generators; removal of all electrical parts on 14 winches, which were cleaned and shop tested by Dahl-Beck Electric Company and General Electric Company; reseating and regasketing all handhole plates on boilers, and overhauling boiler mountings, main steam valves, etc., under the annual Coast Guard inspection; and checking and repairing all feed pumps, lube oil pumps, circulator pumps, general service and bilge pumps under the four year American Bureau survey. Several hundred men were engaged on the job.

While the *"Merrell"* job was completed at a Channel pier, much of the shop work was done in the Wagner & Niehaus big shop at 2896 Jones St., San Francisco. The firm consists of Albert H. Wagner and Clarence E. Niehaus, with John N. Faville as estimator and Wilbur Riley on sales.

Left to right: Albert H. Wagner, Clarence E. Niehaus, and John N. Faville.



The "Pvt. Josph F. Merrell," one of the last of the transports to be repaired under Army jurisdiction prior to transfer to MSTS. Successor to such pioneer transports as the "Sherman," "Logan", "Thomas" and "Buford" referred to elsewhere in this issue, the "Merrell" will operate out of San Francisco.

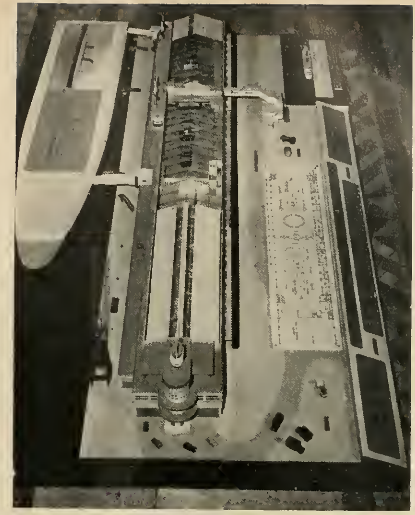
Model of Southampton Terminal

A seven-foot model of the mammoth new ocean terminal being constructed at Southampton by British Railways is being displayed in the downtown New York office of The Cunard Steam-Ship Company. A picture of the terminal nearing completion at Southampton appeared in the February issue of *Pacific Marine Review.*

The new British Railways terminal, being constructed at a cost of over three million dollars, is expected to be completed in time to accommodate the seasonal influx of American tourists in June. Capable of handling the two "Queens", the largest liners in the world, the building stretches for a quarter of a mile along the quayside and provides complete facilities for the rapid dispersal of thousands of passengers.

The first floor of the building will provide space for Customs examination, cargo working areas, two parking grounds and tracks for operating two full-length boat trains simultaneously. The second level consists of additional Customs inspection space and tastefully-decorated waiting rooms, complete with buffets, writing rooms, an array of telephone booths, tourist agencies, an office to exchange money, post office and just about everything needed by transients during their brief stay. Elevators and escalators will carry passengers from the waiting rooms to the twin platform on the lower level whence boat trains will whisk them to London.

With the completion of the new terminal, visitors arriving at Southampton in inclement weather may proceed all the way to their London hotel rooms without being exposed to the elements. Debarking from the ship across covered gangways and proceeding through the terminal to special boat trains, passengers leaving the train at Waterloo Station in the British capital may enter taxis via a newly erected canopied driveway and be driven directly to their hotel entrance.



Model of the new British Railway Ocean Dock Terminal now under construction at Southampton. The terminal is being constructed primarily to handle the "Queen Elizabeth" and "Queen Mary," world's largest liners.

Hinrichs Retires from GE

Max A. Hinrichs, widely known throughout the Pacific region and the Hawaiian Islands for his work as electrical engineer on marine and power installations, has retired after 43 years of service with the General Electric Company.

For almost four decades, since Hinrichs joined the San Francisco office of General Electric's Apparatus Department in 1911, he has had a prominent part in the installation of power equipment in the Hawaiian Islands and along the Pacific Coast from Seattle to San Diego. In 1941 he was given the company's highest honor, the Coffin Award, for the development of a new supporting and centering arrangement for turbine diaphragms which has saved considerable installation time and expense in the modern turbines.

Graduating in 1907 from Oregon State with a B. S. degree in electrical engineering, Hinrichs immediately joined General Electric's student engineering course at Schenectady, N. Y. Four years later he came to San Francisco as field installation engineer of turbine generators, working with both the Central Station and Marine divisions of the company. He supervised in 1914 the first set of G-E turbine reduction gears ever to be installed on a cargo ship.

Following the attack on Pearl Harbor he was sent as assistant supervising engineer to Honolulu to rebuild the main turbines, generators and motors of the USS *California* and USS *West Virginia,* both of which had been at the bottom of the harbor for months. Sixty G-E service engineers from all over the country accompanied him.

After the completion of this almost impossible task, he returned to the mainland where he took part in disassembling two 35,000 kw turbine generators that were sent abroad on lend lease to an ally.

Until the time of his retirement, he was engaged in the installation work of hydro-generators at Keswick Dam and other special asignments.

Max A. Hinrichs

Plenty of Steam...
from Western Ship

On the recent repairs to the USAT "Private Joseph F. Merrell," WESTERN SHIP SERVICE furnished steam and electrical power from their steam barge during the shut-down period.

WESTERN SHIP SERVICE CO.

178 Fremont Street **San Francisco 5**

Telephone: SUtter 1-8632

Bulletin by Babcock & Wilcox Tube Co.

The Babcock & Wilcox Tube Company announces a new illustrated bulletin on heat exchanger and condenser tubes. It concerns the economical choice of appropriate tubing for specific service conditions in heat transfer units and for easy fabrication in heat exchanger apparatus. B & W engineering and manufacturing experience is offered to help solve such problems as resistance to corrosion, resistance to oxidation, strength at high temperatures and low temperatures, as well as fabrication problems of bending, expanding and beading which specify uniform quality, size tolerances and mechanical properties.

Specifications and data are offered in a table on carbon, low chromium, intermediate chromium, nickel and stainless steels.

Bulletin TB-329 is available free on request to The Babcock & Wilcox Tube Company, Beaver Falls, Pa.

Pacific Coast Ship Chandlers Election

C. K. Howe

At the February meeting of the Pacific Coast Ship Chandlers Association, the following were elected officers and directors: President, C. K. Howe; Secretary, I. C. Freeman; Directors, Ed. Cunningham, L. D. Adams, J. C. Freeman, H. H. Haviside, C. K. Howe, Dave Honeyman, Ray Mitchell, Jack Nuttall and A. G. Clark, Jr.

Engineering Papers Of Hydraulic Institute, Vol. II

Hydraulic Institute, trade association of pump manufacturers, recently published "Engineering Papers of Hydraulic Institute, Volume II," which is a group of engineering papers on subjects pertaining to pumps. The papers won awards in various engineering contests sponsored by Hydraulic Institute for the employees of its members, and are as follows: Section 1—Cavitation in Centrifugal Pumps, by A. J. Stepanoff; Section 2—The Centrifugal Pump in the Process Industries, by A. T. Nielsen; Section 3—The Operation of Centrifugal Boiler Feed Pumps, by Hans Gartmann; Section 4 — Submergence for Centrifugal Condensate Pumps, by Hollis T. Waldo.

Copies of the publication may be secured from Hydraulic Institute, 90 West St., New York 6, N. Y., at $2.00 per copy.

Improved Magna-Sight Flow Gauge

A completely redesigned Magna-Sight flow gauge is announced by the Fisher & Porter Company. The unit consists of a short body, with flanged or screwed pipe connections, which accommodates a fixed orifice in the lower end. A tapered metering plug rises and falls with fluid flow rate in accordance with variable-area metering principles. The metering plug carries a permanent magnet, and a hollow, cylindrical, soft-iron follower rides in an external slot. Covering the slot is a plate on which is engraved a scale calibrated either in gallons per minute or in millimeters. The position of the follower relative to the scale indicates flow rate.

Magnasight Flow Gauge

The Magna-Sight flow gauge is available in brass, bronze, iron, steel and type 316 stainless steel; in sizes from ¾″ to 4″, and with maximum capacities from 3.5 to 250 gallons per minute. (Minimum capacity is one tenth of selected maximum.) The flow gauge can be used for clear & opaque liquids, slurries and other fluids, and accuracy averages about 5% over the scale range. Temperatures up to 400° F. and pressures up to 500 psig can be accommodated.

Copies of a revised catalog 96, illustrating the redesigned Magna-Sight flow gauge, can be obtained by writing to the Fisher & Porter Company, 96 County Line Road, Hatboro, Pennsylvania.

Linear Conversion Table

A linear conversion table for handy reference by engineers who frequently wish to convert inches and fractions of inches into decimal parts of a foot has been printed by The Babcock & Wilcox Tube Company. The table is suitable for many purposes in addition to those encountered in the application of steel tubing, the company says.

Known as TDC-110, the table is arranged on a single card and is available free to interested parties upon request from the home office of The Babcock & Wilcox Tube Co. at Beaver Falls, Pa.

ALL KINDS OF
DOCKSIDE REPAIRS
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Naval Architects and Marine Engineers

Southern California Section

Groups below are pictured at their January meeting. (The paper presented at this meeting, "Recent Developments in Ship Propulsion Gearing," appears on page 49 of this issue.)

Top: Speaker's Table. Left to right: Capt. Everett E. Mann, Long Beach Naval Shipyard; Paul Forsythe (standing-main speaker), Western Gear; Bert Hale, Marine Solvents; William B. Warren, American Bureau of Shipping; E. W. Sweezy, Lieut. Comdr., USNR, Long Beach Naval Shipyard.

Center: Around the table—W. E. Hoard, Pacific Gear & Tool; P. J. Hoard, Western Gear; John Shea, Bethlehem Steel; Art De Fever, Wilvers-De Fever Marine Architects; Myles Rados, Harbor Boat Works; Wayne Johnson, San Diego Marine Construction Co.; Bill Courtiour, Bethlehem Steel; William Selover, Sperry Gyroscope; "Casey" Emerson, Sperry Gyroscope; Karl French, Marine Architect; W. J. Bloomfield, Lloyd's Register of Shipping; Edwin Pike, American Bureau; M. A. Locaty, Moormac Lines; J. E. Marriner, Craig Shipbuilding Co.

Among those at this table are: Bottom: Glenn G. Gulvin, American Pacific SS Co.; Fred Cordes, Hillcone SS Co.; Albert O. Pegg, Marine Solvents Corp.; U. W. Hird, Union Oil Co. of Calif.; Arthur Pegg, International Paint; A. R. Pegg, Jr., International Paint; A. J. Maloney, Bethlehem Pacific Coast Steel Corp., Shipbuilding Division; E. B. Powell, Bethlehem Pacific Coast Steel Corp., Shipbuilding Division; W. P. Trammell, National Steel & Shipbuilding, San Diego; John Black, American Bureau of Shipping; J. R. Allan, Todd Shipyards, San Pedro; Jack Deckard, American Bureau of Shipping.

Top: Included here are: Joe Costello, J. M. Costello Supply Co.; R. O. Eaton, General Electric; O. W. McAnulty, General Electric; R. S. Wright, Western Gear Works; Jack Hunter, Western Gear Works; Paul Gaudin, American Pacific SS Co.; G. French, Richfield Oil; J. R. Morris, Western Gear; John Maddock, Western Gear; C. H. Ragsdale, Ragsdale & Newell Oil Co.; Bob Sullivan, Shepard Diesel Marine; Heinz Schrader, Western Gear Works; "Bill" Harrington, Bethlehem Pacific Coast Steel Corp.

Bottom: Included here are: Fletcher M. Young, Naval Architect; R. C. Dalrymple, American Pacific SS Co.; C. J. Duggan, American Pacific SS Co.; George McCoy, Marine Solvents Corp.; F. G. Black, American Pacific SS Co.; Jack Deckard, American Bureau of Shipping; Frank Cavanaugh, Cavanaugh Machine Works; Fritz Scheibe, Marine Surveyor; S. L. Crawshaw, Western Gear; A. Sherman, Pacific Pumps, Inc., L. A. Acurso, Western Gear.

Shippers know that time saved is money earned. Our engineers and draftsmen had this in mind when they designed and built the Port of Long Beach. The entire concept of this port is unique. Its proximity to the open sea reduces greatly the time and expense of bringing a ship to berth. Its radar installation eliminates costly delays due to fog or low visibility. Its bulk loading conveyor reduces time spent in loading bulk commodities. Its shipside railway trackage eliminates costly transfer and excess handling of cargoes. The port's integrated system of rail, truck and air transport facilities speeds delivery to market destinations. All-in-all, a highly functional "package" of time-saving facilities and services is yours when you ship via the Port of Long Beach.

The Port of Long Beach
AMERICA'S MOST MODERN PORT ★ CALIFORNIA

Worthington Equipment On Super-Liner

The United States Lines' new super-liner under construction by the Newport News Shipbuilding and Drydock Company at Newport News, Va., and designed by Gibbs and Cox, will contain approximately a quarter-million dollars' worth of pumping equipment to be built by Worthington Pump and Machinery Corporation's Harrison Works.

The most notable of the equipment will be the main boiler feed pumps, considered the heart of the ship. These will be six turbine-driven, 8-inch, 4-stage horizontal centrifugal pumps manufactured of special steel alloys to withstand the unusually high temperature (410° F.) and pressure (1200 lbs. per square inch gage). These conditions are considerably higher than those in former designs of commercial passenger ships.

Worthington will also supply four port boiler feed pumps for operating while the ship is in port. These will be 3-inch, 4-stage, turbine-driven horizontal centrifugals, operation against 1100 lbs. per square inch gage, and will be manufactured of material similar to the main boiler feed pumps.

Four Worthington Deaerating Feedwater Heaters will each handle 464,600 lbs. per hour. These will be constructed of Monel Metal and will preheat and reduce the oxygen content of the water before it enters the boilers.

Two Diesel engine driven five-inch centrifugal fire pumps will each handle 1000 gallons per minute of seawater against 150 lbs. discharge pressure.

A motor-driven six-inch Vertical Centrifugal Submersible Bilge Pump (self priming) will handle 1200 gallons per minute of seawater against a 35-lb. discharge pressure.

Four 9″ x 10″ x 12″ Vertical Simplex Fuel Oil Stripping and Bilge Pumps will each handle 240 gallons per minute against a 60 lb. discharge pressure.

The new 60,000 gross-ton liner is expected to be completed during the summer of 1952 and will contain some of the most ultra-modern engineering advancements in shipbuilding, as well as the most deluxe conveniences for the comfort of its 2000 passengers. The cruising speed of the ship will be approximately 28½ knots.

Reynolds Appointed Mgr. Of De Laval's Los Angeles Office

H. H. Reynolds has been appointed manager of the Los Angeles office of the De Laval Steam Turbine Company, manufacturer of centrifugal pumps, centrifugal compressors, steam turbines and speed reducers. Having been located in the home office of the De Laval Steam Turbine Company for many years, Reynolds is familiar with the engineering design and application of all De Laval products. His territory comes under the direction of Carroll Reeves, Pacific Coast manager.

18 knot White Cargo Liners

- Twice monthly to and from Manila, Hong Kong, Japan.
- Regular calls at Formosa, Cebu, North China, Philippine and Japanese Outports.

Ventilated stowage — refrigeration cargo lockers — deep tanks.

PACIFIC TRANSPORT LINES, INC.

244 California St., San Francisco 11
609 South Grand Ave., Los Angeles 14
Eastern Traffic Agents
AJAX STEAMSHIP AGENCIES, INC.
New York 14, 345 Hudson St.
Washington, D. C., 1625 "K" St., N.W.
Chicago 4, 327 S. La Salle St.
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Modern Passenger Accommodations

Call Us **FIRST** *for*

FAST, DEPENDABLE DAY AND NIGHT SERVICE

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ENGINE ROOM

SUPPLIES

HARBOR SUPPLY CO INC

Harbor Supply Co. Inc

[illegible]

Mills Elected President of Foster Wheeler

Vice Admiral Earle W. Mills, United States Navy (Retired) was elected president of Foster Wheeler Corporation at a meeting of the board of directors on February 27, 1950. David McCulloch, formerly vice chairman of the board was elected chairman of the board. Harry Sanford Brown, formerly chairman of the board and president, died suddenly on February 18, while on a voyage to South America.

Vice Admiral Earle W. Mills

Wartime Deputy Chief of the Bureau of Ships, and Chief of that Bureau in 1946, Admiral Mills joined Foster Wheeler in 1949 as executive vice president and a director. For his long connection with ship machinery design, administration of the Navy's shipbuilding program, and as Deputy Chief of the Bureau of Ships during World War II, he was awarded the Navy Distinguished Service Medal. Admiral Mills was presented the David W. Taylor Medal in 1948 by the Society of Naval Architects and Marine Engineers for "Notable Achievement in Marine Engineering."

Admiral Mills was born in Little Rock, Arkansas, graduated from the U. S. Naval Academy in 1917, and received his degree of Master of Science in Naval Engineering from Columbia University in 1924. He was awarded the honorary degree of Doctor of Engineering by the University of Louisville in 1934.

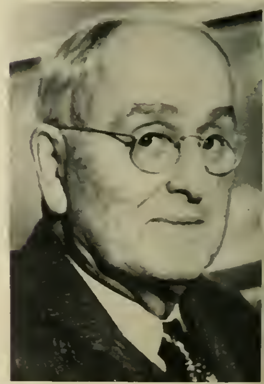
McCulloch joined the Power Specialty Company, a predecessor of Foster Wheeler Corporation in 1906. In 1927 when the present corporation was formed he was made secretary and assumed the duties of executive vice president in 1935, a position which he held until 1949 when he was made vice chairman of the board.

Cecil E. Paine Retires from Hyde Windlass

Vice President and Director since 1932, Cecil E. Paine recently retired from the Hyde Windlass Company, Bath, Maine.

A native of Portland, Maine, Paine was graduated from M.I.T. in 1893 and shortly afterwards joined the Hyde concern, manufacturers of steering gears, windlasses, and a complete line of deck as well as special machinery.

Paine has been a member of the Society of Naval Architects and Marine Engineers since 1900, the Engineers Club of New York, director of the First National Bank of Bath, and was one of the founders of the Bath Country Club.



Cecil E. Paine

Lunde, Thompson Merge

Thomas T. Lunde Associates and J. Paul Thompson Company have formed an association under the firm name of Lunde-Thompson, marine engineers, naval architects and marine surveyors. Their new offices are at 371 Fourth Street, San Francisco. Telephone YUkon 6-5302.

John P. Harkrader, president, Marine Safety Equipment Corp.

Marine Safety Equipment Corp. Going Strong

Certain to become a strong element in the maritime industry is the relatively new firm of which John P. Harkrader is president, Marine Safety Equipment Corp. at Point Pleasant, New Jersey. Organized late in 1945, the so-called run-of-the-mill stuff which "Maseco" has been turning out has included some of the really big lifeboat and davit installations of the postwar period. Included among the vessels equipped are 24 of the new high speed tankers.

Something new in lifeboats will be those now under construction for the American Export Lines' *Independence* and *Constitution* now under way at Bethlehem's Quincy yard. Tom Short, who represents the company at San Francisco, describes the new aluminum boats as the biggest ever built, with a capacity of 150 persons.

Gould Bulletin On Diesel Battery Maintenance

The Gould Storage Battery Corporation, Trenton, N. J., announces an informative new three-page bulletin entitled "Instructions for the Maintenance of Gould Batteries for Diesel Engine Cranking Service." The bulletin presents 14 valuable battery maintenance procedures covering battery care from initial installation through complete charging operations.

The first section lists five safety rules. The following section tells how properly to install batteries to prevent shifting. Other sections give information on battery cleaning, compartment ventilation, cell identification, and record keeping.

The effects of temperature and electrolyte level on specific gravity are detailed in Section 10, while other sections discuss over-heating, the use of pilot cells, and the addition of acid. Section 13 is concerned with the maintenance of spare batteries and is divided into three sections on general care, testing, and charging.

The last section includes full instructions for setting the generator voltage so that the specific gravity of the electrolyte will be maintained at its full charge reading.

The bulletin, punched for easy insertion in a three ring notebook may be obtained by writing the Gould Storage Battery Corporation, Trenton 7, N. J.

Tug "Frank G. White", for the Board of State Harbor Commissioners, built by *PACECO.*

...did twice the job

Quoting an article by Morris Guralnick, Naval architect, in Pacific Marine Review:

. . . "The day after delivery, the "Frank G. White" was given a performance test by her new owners. When set to the task of moving a dredge for a specified distance, she accomplished the job in half the time required by previous craft."

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The 27,000-Ton Supertanker

(Please turn to page 67)

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The fuel oil heaters are of Griscom-Russell make and the Butterworth heater and drain cooler are Ross.

The Sun heat balance shows that by using the exhaust from the circulator and feed pump turbines for feed heating and evaporators, the requirement for main turbine extraction is only 540 pounds per hour for normal sea steaming.

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No. of Units	Name	Make	Normal RPM	Disch. Press.	Type	Rated HP	Speed Range
2	F.O. Service	DeLaval-Imo.	1750	325#	Rotary	15	1750/850
1	F. O. Transfer (E.R.)	National Transit	300	125#	Rotary	75	1750/875
2	L.O. Service	DeLaval-Imo	1750	35#	Rotary	15	1750/850
2	L.O. Purifier	DeLaval	1725	—	Unimatic	2	Const.
1	General Service	Worthington	1475	125#	Centrif.	75	1750/850
	Max.		1750	Max. 200#		75	
2	Sanitary	Worthington	2050	60#	Centrif.	15	2050/1750
1	Diesel Gen. Circl.	Worthington	1750	15#	Centrif.	2	Const.
3	Bilge	National Transit	420	40#	Rotary	7.5	1750/1150
2	Drinking & Wash Water	Worthington	205	60#	Plunger	1	Const.
2	Eng. Rm. Vent Supply	Sturtevant	1270	2″SP	Fan	10.5	1270/850
2	Eng. Rm. Vent Exh.	Sturtevant	1270	2″SP	Fan	10.5	1270/850
2	Blr. Rm. Vent Supply	Sturtevant	1150	2″SP	Fan	15	1150/870
2	Quarters Supply (Aft)	L.J. Wing	1750	1.5″SP	Fan	3	Const.
2	Quarters Exh. (Aft)	Ilg	2800	1″SP	Fan	.50	Const.
1	Quarters Supply (Midsp)	Ilg	855	1¼″SP	Fan	1.75	Const.
2	Air Compressor	Worthington	870	100#	2-stage	15	Const.

Machinery Arrangement

The operating platform is forward of the main turbines, with the control and gauge board against the forward engine room bulkhead. Engineer's workshop (containing a lathe, shaper, drill-press and grinder) and store room is on a flat on the starboard side, at the same level as the generator flat port side. A tranverse watertight bulkhead extending up to the boiler flat (with no door) divides the lower machinery space into forward and after compartments. The screen bulkhead between engine and boiler rooms is also water-tight up to the upper deck, with a hinged W.T. door at the boiler flat.

Special attention has been given to the layout of auxiliaries, piping, floors, gratings and ladders, resulting in a simple, convenient, and clean-looking arrangement.

Trials

On each vessel a thorough dock trial is conducted, as well as a six-hour endurance run in open water at full power. On the *Sovac Pegasus,* standardization runs were also made on the measured course at Delaware Breakwater. At 12,500 SHP, the curves show 110.6 RPM and 16.85 knots; at 13,750 SHP, 114.2 RPM and 17.22 knots; all at contract draft. A torsion-meter has been used on all the trials. On the *Sovac Comet,* standardization runs are to be made at a ballast draft of 20′-0″ forward and 27′-0″ aft.

PAY CUT. Effective July 1, 1950, enrollees in the U. S. Merchant Marine Academy, as well as the State Maritime Academies and College, will no longer receive Midshipman's pay of $65.00 per month. Furnished free, however, will be uniforms, textbooks, equipment, tuition, quarters, food, medical and dental care and travel expenses as prescribed in regulations.

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De Laval-Pacific Appoints Industrial Sales Manager

E. C. Elvidge, Vice President and General Manager of the DeLaval Pacific Company, recently announced the appointment of Robert K. Hood as Sales Manager of the Industrial Division. Hood's duties will embrace marine and industrial sales and service at West Coast ports and industrial areas. Hood has been with the organization for four years, having joined the firm following four years war service as pilot in the 15th Air Force.

Robert K. Hood, Sales Manager of the Industrial Division, DeLaval-Pacific Company (left) and E. C. Elvidge, Vice President and General Manager of the De Laval Pacific Company.

LORAN, RADAR AND GYRO. 14 day training duty and instruction periods in the operation and maintenance of Navy and other types of Sperry Gyro Compass, Loran and Radar equipment are offered in the THIRD and EIGHTH Naval Districts. Sperry schools which have conducted such training for officers of the Naval and merchant services for the past 34 years now make their facilities in New York and New Orleans available to qualified Naval Reservists. Full Naval Reserve credits will be earned by those completing these courses, although lack of training funds at this time may necessitate orders to such training duty without pay. Applications should be made to your local commandant.

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If we are to make a democratic civilization, we must remember the need for something no less important than equality. That something is Quality.
—*Sir Richard Livingstone.*

Westinghouse Engineering Supervisor

F. W. Beichley, appointed Pacific Coast District engineering supervisor for the Westinghouse Electric Corporation, with headquarters in San Francisco.

F. W. Beichley has been appointed Pacific Coast District engineering supervisor for the Westinghouse Electric Corporation with headquarters in San Francisco.

Formerly transportation engineering supervisor at San Francisco, Beichley, in his new post as engineering supervisor, will correlate the company's consulting and application engineering in the Pacific Coast district with the engineering manager's office at East Pittsburgh. He will also retain the responsibility for all operations which have come under his direction as transportation engineering supervisor.

A native of Kansas, Beichley joined Westinghouse in 1937 as a graduate student at East Pittsburgh, Pa., after his graduation as an electrical engineer from Kansas State College with a Bachelor of Science degree. He left the company in 1939 to take a post-graduate course at the California Institute of Technology. After his graduation in 1940 with a Master of Science degree in electrical engineering, he returned to Westinghouse at East Pittsburgh as a design engineer. In 1942, he was transferred to San Francisco.

Associated Boat Industries Elect

At the annual meeting of the Associated Boat Industries, held at the St. Francis Yacht Club in January, F. W. Howe, of Weeks-Howe-Emerson Company, was elected president of the Association.

Brosio Promoted by National at San Diego

Fox Joins National

A. L. Brosio

New general manager and vice president of the San Diego plant of National Steel and Shipbuilding Corporation is A. L. Brosio, who was formerly assistant general manager. Ray Fox, a former General Motors and Moran Towing Company executive, has been appointed as executive vice president of the San Diego concern.

Brosio has been with National Steel for over seven years, serving as their wartime production manager, plant manager and, more recently, treasurer.

Fox was formerly executive vice president of Moran, and prior to that served General Motors Acceptance Corporation in an executive capacity for over 20 years.

Ray Fox

Roebling's New S. F. Manager

George Bukowsky

From Wisconsin by way of Portland, Oregon, George Bukowsky reached San Francisco and in January took over as Manager of the San Franciscso branch of John A. Roebling's Sons of California. He joined Roebling's in Portland in 1925 and later travelled throughout the northwest out of Spokane. In 1942 he was made Manager of the Portland branch, from which post he moved on to San Francisco.

Hydraulic Equipment Bulletin

An extensive line of hydraulic equipment for Marine Auxiliary Drives and Steering Mechanisms is described in a new bulletin from Vickers Inc. Unusual precision and smoothness of control, space savings, flexibility of installation, reliability, and lower maintenance costs are important features of these drives, which are built around the well-known Vickers hydraulic units.

Write for Bulletin No. 3940 to W. E. Rouse, Manager, Marine Sales Division, Vickers, Inc., 1400 Oakman Blvd., Detroit 32, Michigan.

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Automatic Electric Sales Corp.—Sound Power Telephones
Diehl Manufacturing Co.—Electric Fans

Army Transport

(Continued from page 68)

Embarkation given special recognition by the Port Commander, Major General James A. Lester, last November in recognition of 25 years or more of government service, more than half were Water Division employes. One of them, Vicente Frias, a transport steward, had a record of 44 years service.

Among them are Captain Berry, the Marine Superintendent, and five transport masters, John Sandbote, Sr.,

(Please turn to page 85)

New Officers Take Over At San Francisco Propeller February Meeting

THE PROPELLER CLUB OF THE UNITED STATES
PORT [illegible] SAN FRA[illegible]CO

Picture at left: Lloyd Fleming, Maritime Commission; H. B. Perrin, Matson Navigation Co. (Chairman of Nominating Committee); Lon or Alonzo Huntington, RCA, speaker; Ed Harms, Pope & Talbot, retiring president; K. C. Tripp, Moore-McCormack, incoming president; A. J. Pessel, Matson Navigation Co., incoming secretary; Gene Hoffman, American President Lines, retiring secretary. In the foreground are H. D. Ross, Westinghouse, and Harold G. Rethmeyer (with pipe), Westinghouse.

Pictures at right:
Top, left to right: Marshall Levis, Marsh & McLennon; Harold Reeves, DeLaval; George F. Cooley, American Hawaiian; John Parker, American Marine Paint Company.
Center, left to right: Jack Nuttall, Nuttall-Styris Co., San Diego; W. I. Atherton, Tubbs Cordage Co.; Lester C. Krames, Santa Fe Ry.; Elmer B. Johnson, Santa Fe Ry.; Tom Rolph, Rolph Mills & Co.

Bottom, clockwise around the table: Jos. Moore, Jr., Moore Dry Dock Co.; Charles Bulotti, Bulotti Machinery Co.; Jos. Moore, Moore Dry Dock Co.; A. F. Pillsbury, Pillsbury & Martignoni; Robert Banks, Cruse & Banks; Roy Folger; Eugene R. Spunn, Moore Dry Dock Co.; Phil Coxon, Moore Dry Dock Co.

Army Transport

(Continued from page 84)

Lars Larsen, Albertinus Andersen, John Tipaldo, and William Parta.

The seven masters commanding the Port's P-2's in February 1950 (one as a relief for a master on leave), represented a total of 214 years of seagoing experience, an average of 30 years each. Longest sea service was credited to John Sandbote, Sr., with 47; shortest to his son, Captain John Sandbote, Jr., with 19. In between were Captain Frank Link with 42; Captain Neil Sorensen with 34; Captain Earl Evey with 28; and Captains Howard

(Please turn to page 91)

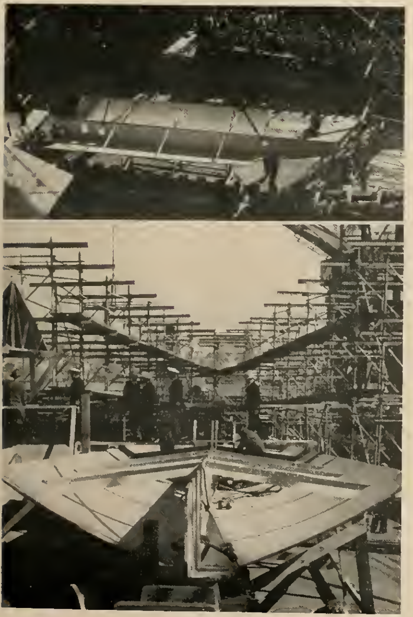
Killer Keel Laid at Mare Island

The keel of the SSK-2, a new killer type submarine, was laid at the Mare Island Naval Shipyard February 23. The SSK-2 is one of three killer type under-sea craft authorized two years ago.

Mare Island Naval Shipyard (Vallejo) will build two of these new type submarines and the other is under construction at the Portsmouth Naval Shipyard, Portsmouth, N. H.

The keel for SSK-3 is scheduled to be laid at Mare Island, June 1, 1950. The keel laying of the SSK-2 is the first time a keel has been laid at the Mare Island Naval Shipyard since April 1944.

Ever see the keel of a submarine?



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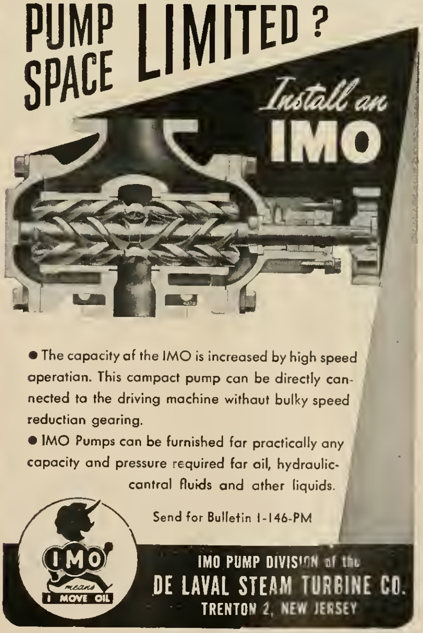

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Fairbanks Morse Diesel Engine Meeting

A meeting of diesel engine sales personnel of the West Coast branches of Fairbanks, Morse & Co. was held in San Francisco February 20. In charge of the meeting was J. W. Wright, manager, General Diesel Sales, Chicago. Accompanying Wright was H. E. Dahlund, chief engineer of the diesel division of Fairbanks, Morse & Co., Beloit, Wisconsin. The Portland branch was represented by J. C. Elmburg, manager, and W. J. McIntosh, manager of the diesel engine department; the Los Angeles branch by A. M. McLaren, manager, and H. C. Heil, manager of the diesel engine department; the San Francisco branch by R. M. Murray, manager, and Howard Oxsen, manager of the diesel engine department. Also in attendance were a number of field engineers of the several branch houses assigned to the sale of diesel engines. The meeting was for the purpose of analyzing sales potentials on the West Coast, and for the outlining of a company sales program for the year 1950.

Left to right: J. W. Wright, H. C. Heil, Howard Oxsen, and R. M. Murray.

Fairbanks Morse Personnel Changes

J. C. Elmburg, who has for the past three years been manager of the Atlanta branch of Fairbanks, Morse & Co., has been transferred to Portland, Oregon, where he has assumed the duties of branch manager, succeeding Howard Oxsen. Oxsen has been transferred to the San Francisco branch of Fairbanks, Morse & Co. as manager of the diesel engine sales. Oxsen is well known in marine circles in the San Francisco area.

H. G. Nagel, former manager of the diesel engine department of the San Francisco branch, has been assigned to sales engineering coverage of a number of industrial accounts in the San Francisco Bay area.

New GE Radar Presented to Maritime School

Instruction in the latest G. E. Electronic Navigator is now available to cadets and sea-going officers of the maritime service at the Alameda Training Station of the USMS, thanks to the presentation to the school of a new model MN3a by General Electric and their California representatives, Ets-Hokin and Galvan.

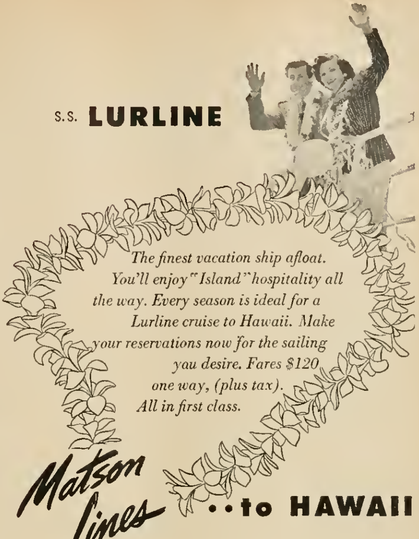
The new model is called the "Bifocal" because it delivers two pictures at once, there being always a 2-mile image present on the 7″ safety scope, while the 12″ working scope may be adjusted to give all the way from a ½ mile to a 40 mile range. Other advantages include a "barber chair" adjustment that allows the console to rotate 180 degrees, and to be elevated and lowered to suit the user. Exact ranges in tenths of miles are readily readable with a simple adjustment.

Picture above was taken on the occasion of a recent demonstration of the G. E. Radar at the Alameda Training Station. Left to right: Louis Ets-Hokin, president of Ets-Hokin & Galvan; Charles T. Haist and W. M. Boland of General Electric; Todd Hecker of Ets-Hokin & Galvan; Jack H. Healy and Frank X. George of Pillsbury & Martignoni.

Texaco Cruising Charts

The Texaco Waterways Service of the Texas Company now has available East Coast and Gulf Coast cruising charts numbered as follows: 1. Atlantic Coast: Eastport, Me. to Block Island, R. I.; 2. Atlantic Coast: Block Island, R. I. to Sandy Hook, N. J. including Long Island Sound; 3. Atlantic Coast: Staten Island, N. Y. to Cape Henlopen, Del.; 4. Atlantic Coast: Cape May, N. J. to Cape Henry, Va. with Delaware and Chesapeake Bays; 5. Atlantic Coast: Cape Henry, Va. to Key West, Fla. (The Intracoastal Waterway and Florida West Coast); 6. Gulf Coast: Cedar Keys, Fla. to Brownsville, Texas; 7. Hudson River: New York Harbor to St. Lawrence River and Lake Champlain; 8. Great Lakes and adjoining Waterways; 9. Mississippi River and Tributaries.

The charts are available from: Texaco Waterways Service, 135 East 42nd St., New York.



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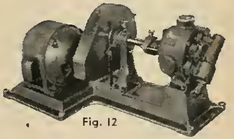

Fig. 12

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Ship Propulsion Gearing

(Continued from page 53)

it to float and to deflect to equalize the loading at the multiple mesh points.

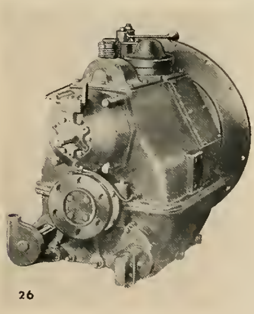
Many intriguing possibilities for propulsion systems are opened up through the application of light weight planetary gearing which, though not conventional, are so fundamentally sound that they cannot long be overlooked. To our knowledge, all main reduction gears have to date been mounted rigidly to the hull of the ship and usually arranged to withstand the entire thrust of the propeller as well as the gear reaction forces. We strongly believe that the correct way to approach this problem is (Fig. 22) to divorce the propeller thrust bearing from the gear, mounting it rigidly a short distance forward of the stern packing gland. A light weight planetary type reduction gear can then be mounted a short distance forward of the thrust bearing and connected to the tailshaft and to an intermediate shaft through vibration absorbing flexible couplings. The gear unit can then be flexibly mounted on shock mounts designed to damp out vibrations normally transmitted to the gear. This may be compared with the present day mounting of an automobile engine in the chassis. We all know how effectively the present day engine mounting has isolated engine vibration from the body as compared with the old style method of rigidly mounting the engine in the frame. The symmetrical configuration of the planetary gear case is readily adaptable to scientifically correct vibration isolating mountings of many types and by tuning these mountings to the entire engine-propeller system, great benefits can be realized in overcoming destructive dynamic loading of various components of the system due to vibration. Further extensive savings in weight can be made by the reduction in torque carried by the intermediate shaft with the reduction gear located well aft, the long shaft then being a low torque, high speed component. This intermediate shaft can also be readily designed for resilience and tuned to the vibration characteristics of the system. This should also be done, of course, at the tail shaft in order to damp out torsional vibrations set up by the propeller.

A further innovation would be the addition of a torque measuring device to the planetary gear unit. This is accomplished conventionally in most radial type aircraft engines and can just as easily be accomplished in ship propulsion systems. As indicated in Fig. 23, one or more arms are provided on the gear case, the reaction being measured mechanically or, sometimes more conveniently by hydraulics with pressure sensitive cells which can readily transmit pressure readings directly to the engine room or to the bridge. This involves no sacrifice of reliability or hazard due to failure of any part but enables the Chief Engineer to know the exact output of his engine at all times.

Some considerable work has been done along the lines of adapting multiple engine drives to ship propulsion. Multiple engine drives can be arranged to provide auxiliary power by using one or more of the engines in the system for auxiliary power at times when a peak demand for auxiliary power is made, but this power can readily be thrown back into the main propulsion system when desired (see Fig. 24). The advantages of this type of drive are numerous but consist chiefly in improved flexibility, space economy and the use of smaller, less expensive, high production engines. An infinite number of arrangements (Fig. 25) are possible to best suit each individual case of hull design, machinery arrangement, main propulsion power and auxiliary power requirements. Hydraulic clutches appear to provide one of the best methods of engaging or disengaging engines from the main drive, this type of coupling having the added advantage of damping out torsional vibrations from the engines and thus permitting smaller gears and bearings.

Going back to aircraft reduction gear, the auxiliary power requirements of modern heavy aircraft require the addition of many accessories to the prime mover. Because of the number, the weight and the varying speed requirements of these accessories, it has become increasingly difficult to attach them to mounting pads on the engine. Recently, therefore, the trend has been to mount them remotely from the engine, sometimes as a part of the main reduction gear. We recently developed a turboprop reduction gear to handle the output of a gas turbine rated at more than 10,000 HP. On this contra-prop gear, mounting pads are provided for 12 accessories including the starter, lube oil and scavenge pumps, tachometer, hydraulic pumps and generators, all driven off the main reduction gear. We wonder if the application of accessory and auxiliary drives to marine reduction gears would not have some outstanding advantages.

Our Western Marine Reduction-Reverse gear for relatively small craft, standard units being rated up to 120 HP per 100 shaft rpm, was designed with this in mind and is being widely utilized. Fig. 26 shows one of these units with fresh water pump on the lower left take-off pad, sea water pump at the lower right, an air compressor on the top of the unit, and a heavy duty power takeoff drive with disengaging clutch which is used to drive deck auxiliaries and such.



26

In this unit, the ahead and reverse clutches of the friction disc type are hydraulically actuated with oil as the fluid medium and are located on the output shaft. Thus the ahead and reverse gear trains operate continuously providing a means of driving the numerous power take-offs.

The numerous advantages and desirability of the use of high speed marine power plants directly connected to the propeller are now well established. Reduction gearing is a vital and necessary element of this system and its selection as to type and size and its location in the system can be dictated as much by the design and functional requirements of the vessel as by the requirements of the power to be transmitted.

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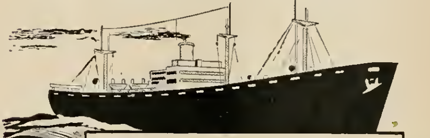

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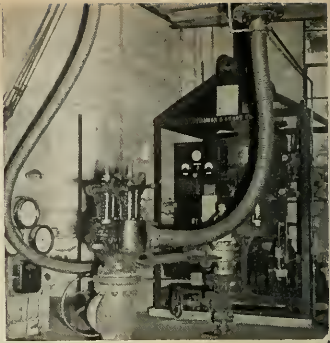

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C-O-Two Fire Extinguishers

Ets-Hokin & Galvan, California marine distributors for the C-O-Two Fire Equipment Co., report that they now have in stock the recently announced C-O-Two Dry Chemical type portable fire extinguisher developed by the originators of the C-O-Two Squeeze-Grip carbon dioxide fire extinguishers.

As described by C. Todd Hecker, sales manager for Ets-Hokin & Galvan, the new Dry-Chemical extinguisher is the result of years of experience and hundreds of tests, which has developed exclusive features that make it one of the most efficient, fool-proof, easy-to-use fire extinguishers known.

It is a self-contained unit designed to take abuse, with no extra gadgets, nor protruding or complicated operating parts. The activating mechanism is totally enclosed within the body of the fire extinguisher, and is fully protected from possible damage. The highly-effective extinguishing agent is a finely pulverized powder that will remain free-flowing without deterioration during long periods of storage. When the C-O-Two Dry Chemical comes into contact with fire, it absorbs a great portion of the heat and in so doing the fine powder particles are instantly decomposed, releasing fire-killing gases. This heat absorption process acts as an insulating screen for the person operating the fire extinguisher, and thus permits fast, efficient action. The squeeze-grip discharge nozzle has a special dry chemical diffuser which assures maximum range and highly efficient fire extinguishing application of the dry chemical with a minimum of turbulence and entrainment of air.

As is true of all C-O-Two Co. equipment, the Dry Chemical Type fire extinguishers are approved by the Underwriters' Laboratories, Inc., and are rated B-1, C-1 —recommended for class B and C fires. The C-O-Two Dry Chemical is non-conducting, non-corrosive, non-abrasive, non-freezing, and non-toxic, but is highly effective against flammable liquid and electrical fires.

An exclusive contract was awarded the C-O-Two Fire Equipment Company by the Treasury Department, Bureau of Federal Supply, for portable fire extinguishers of the Dry Chemical type in the available 20-lb. and 30-lb. sizes.

In addition to carrying a stock of all types and sizes of fire extinguishers manufactured by the C-O-Two

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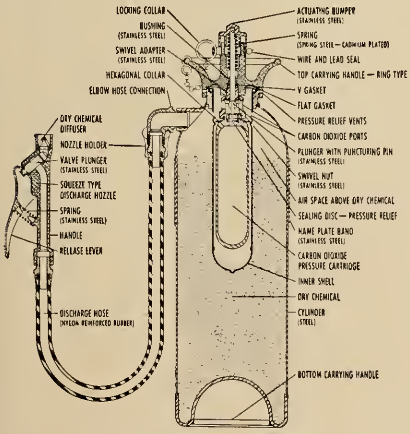
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Diagram of C-O Two Dry Chemical type portable fire extinguisher.

Fire Equipment Co., Ets-Hokin & Galvan maintain a stock of spare or replacement parts and accessories for both dry chemical and carbon dioxide type hand and wheeled extinguishers.

Army Transport

(Continued from page 85)

Cleaves and Walter Williams with 22 each.

On the records of all of them are citations for skillful seamanship, for daring navigation during wartime missions, and for prompt response to emergencies at sea. Frank Link is one of the few American civilians with the Purple Heart. He was wounded at Darwin during a Jap air attack that sank his ship, the USAT *Meigs*, a freighter. Walter Williams has the Army Commendation for Meritorious Civilian Service for his work in rescuing the survivors of a plane crash in the China Sea in 1947 and his evacuation of residents of Camiguin Island in the Philippines during a volcanic eruption in 1948.

Another master with the Meritorious Award is Captain William H. (Billy) Bang, who saved 28 Japanese fisherman from death by starvation by locating their drifting boat south of Japan in 1948 after a three-day search. A veteran of 51 years at sea, Bang, who currently commands a freighter, entered Army service in 1940.

Other masters on duty at SFPE at the time of the changeover to Military Sea Transportation Service were Ottnar Friz, Harold Sawyer, Herbert Randall, Adolph Andersen, Charles Hutcheson, Albertinus Andersen, Dimitry Kritsky, William Parta, Raymond Dollar, Olaf Anderson, Lawrence Snyder, Horace Walling, Louis Brunschon, Leslie Hoxie, Joseph Hayes, Gus Swanson, Lars Larsen, Irving Andersen and John Tipaldo.

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M. S. "Mui Ann"

(Continued from page 43)

sired. The first portion of the control movement from neutral to the half-power propulsion position in either direction provides excitation power for the main propulsion generator from zero value to full value while the propulsion engines are running at idle or minimum speed, while further movement of the control handle maintains the excitation of the main propulsion generators at full value under voltage regulator control as the engine speed is increased from idle or minimum to full speed.

Reversal of propulsion is accomplished by reversing the polarity of the main propulsion generators by reversing the excitation control applied to the variable voltage auxiliary generator used for excitation power for the main propulsion generators. This reversal is accomplished without opening any of the circuits and may be executed from any propulsion value in one direction to any propulsion value in the opposite direction by smooth continuous movement of the control handwheel or handle.

Additional control equipment in the engine room only permits switching main propulsion generators into or out of the series propulsion loop circuit without discontinuing propulsion, so that the horsepower of engines in service may be adapted to the shaft horsepower requirements for a particular condition of draft or trim of the vessel and the desired propelling speed. The engine room control also includes a means for varying the excitation power for the main propulsion motor to permit an approximate 20% variation in the motor speed relative to generator speed to further enable the better balance between propulsion speed and power. This same control also provides for an adjustment of motor speed, and, therefore, propulsion horsepower to best utilize the engine horsepower available when operating with less than four propelling engines.

Protection is provided for the propulsion equipment against excessive currents in the propulsion loop circuit, and excessive loads on the engines during regular maneuvering of the vessel. This protective device is adjusted to come into operation at approximately 120% of normal rated loop current and at current values above this setting, resistance would be inserted in the excitation circuits for the main propulsion generators to cause lowering of the propulsion generator voltage. This device is automatically resetting whenever the propulsion loop current drops to value less than the 120% of normal either through stabilizing of propulsion conditions or through movement of the control handwheel or handle to a position calling for a decreased propulsion effort.

Protection is provided for the propulsion equipment against possible short circuit currents in the propulsion loop circuit, which might be caused by faults developing in these electrical circuits. This protective device is adjusted to operate at approximately 300% of normal loop circuit current. When this device operates, all excitation power and excitation control is immediately discontinued until the protective device is automatically reset by returning the control handwheel or handle to the neutral or off position.

Protection is provided for the propulsion equipment against possible motorizing of the generator and its engine, should a fault develop in the engine and prevent its functioning as a driving unit. This protective device operates when the engine is driven by its generator in the reverse direction at a speed not greater than 50 RPM and discontinues the excitation on the field of that generator to prevent further motorizing at higher speeds. When this protective device has operated, it is intended that the respective generator be switched out of the series propulsion loop circuit after which the protective device may be reset by means of a reset pushbutton on the control cabinet. After the engine fault has been corrected, the generator may be switched back into the series propulsion loop circuit.

The requirements for ship's power for other than propulsion purposes are provided for by three General Motors Corporation diesel engines driving 100 KW direct current generators. These generator sets may be operated in parallel, in any combination as required by the load conditions, and in case of emergency or, when only a single propelling engine is in service, may be used as a source of excitation power for the main propulsion motors and general propulsion control power.

Greasing the Skids

(Continued from page 40)

details of procedure are carried out with care and precision, the launching may end in disaster.

Such a disaster might result should the sliding ways, due to heavy load, squeeze out both greases, permitting wood-to-wood contact. The friction could not only set the wood on fire but the ship would likely stick to the ways. When this happens, it is a difficult job, involving hydraulic jacks and other gear, to get the ship into the water. The importance of launching grease therefore becomes obvious.

Free Retires from American Bureau

Benjamin S. Free, for ten years a surveyor with the American Bureau of Shipping, retired on January 31. Most of his time with the Bureau, except for a while in Seattle on the *Ancon* and *Cristobal* conversion jobs, was spent in the San Francisco office out of which he looked after the Bureau's interests in the East Bay territory.

Bennie sailed for years with the Pacific Mail Steamship Company and was Chief Engineer on the *Olsen & Mahoney*, the first steel steam lumber schooner on the Pacific Coast. He came ashore as Assistant Superintending Engineer under Bill Chisholm. Before coming with the American Bureau in 1940, he practiced as a consultant in connection with wooden lumber vessels.

Foster Wheeler in France

Foster Wheeler Corporation, New York, has organized a French subsidiary, Societe Foster Wheeler Francaise, for handling European construction activities, according to H. S. Brown, chairman of the parent corporation. The French company will maintain offices at 6, Rond Point des Champs Elysees in Paris. R. M. Serre will direct the sales work on the Continent of Europe with headquarters at the Paris office.

Societe Foster Wheeler Francaise will receive the basic engineering from the parent corporation but will be organized to handle the detailed engineering and construction of the plants with French personnel.

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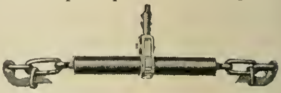
Simplex Introduces Steam Boat Ratchet In Heavy Duty Model

Templeton, Kenly & Company, Chicago manufacturer of Simplex Jacks, has introduced a new Steamboat Ratchet Pulling Jack of 20 tons capacity for use in the marine, construction and engineering fields. It is designed to step up efficiency in both repair and maintenance jobs requiring heavy tonnage pulling.

The new model is built with a 2" screw and is available in three barrel lengths of 24, 30 or 36 inches. It is equipped with lock-link hook-ends for a secure, safe grip, with other operating features similar to those of other models in the complete Simplex line of Steamboat Ratchet Jacks. These include the spring operated plunger which firmly engages the pawl or dog with the ratchet wheel. Reversing the jack, quickly slackens the chains or cable for release.

The new Simplex Steamboat Ratchet is expected to be of particular value in such marine and shipyard jobs as serving as a hitching tow for boats, barges and floats, a guy hold-down for masts and derricks, and to tie pilings and bents together.

Complete specifications and prices are available from Templeton, Kenly & Company, 1020 South Central Avenue, Chicago 44, Illinois.



Condenser Service & Engineering Co. Announce New Catalog

Condenser Service & Engineering Company, Inc., have new catalogs available on Steam Condensers (No. 441-C); Steam Jet Air Ejectors; Packaged Power Boilers (No. G-491); Oil and Water Coolers; and Centrifugal and Piston Pumps. Any of these bulletins may be obtained by writing the company at Seaboard Trust Building, Hoboken, New Jersey.

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Mariners Pathfinder, Jr.

After four years of research and development, Raytheon Manufacturing Company, Waltham, Mass., is introducing the Mariners Pathfinder Jr.—newest in its series of commercial marine radar equipments.

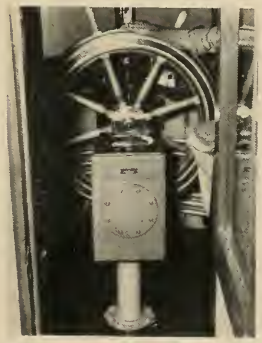
Raytheon—world's largest producer of radar—has added the Mariners Pathfinder Jr. to its complete line of marine electronic equipment for small craft, which includes Marine Radiophones, the Cape Cod Navigator (direction finder) and Fathometer Jr. (echo-depth sounder providing accurate and instantaneous depth measurements).

The Mariners Pathfinder Jr. has been especially designed to answer the demands of operators of tugs, ferries, fishing vessels, yachts and other smaller craft for a compact, low-power drain and lower cost radar without sacrificing quality and dependability.

Comprising an antenna, transmitter-receiver and indicator, the new radar system operates on a wavelength of 3.2 centimeters. Because of the light weight and compact design of all units, the equipment can be used in limited space heretofore unable to accommodate other types of radar systems.

The Mariners Pathfinder Jr. has a minimum range of 75 yards and a maximum of 20 miles. Range accuracy is within 2 per cent and bearing accuracy is within 2 degrees.

Size, weight and arrangement of units of the new equipment permit ready replacement of complete units in the event of emergency service requirements. Operating controls have been reduced to a minimum for simplicity of operation. The cathode ray indicator is a 7-inch high definition tube, and a magnifying lens is supplied to provide enlargement to the equivalent of a 12-inch tube size presentation. Automatic receiver tuning and automatic focus control are provided. A standby power switch position makes possible instant intermittent use of the equipment.



Indicator of Raytheon's Mariners Pathfinder Jr. radar in wheelhouse of the tug "Eileen Ross." The vessel is owned and operated by Ross Towboat Company, Boston. Photograph illustrates compactness of the radar equipment which has been especially designed for smaller craft.

The Mariners Pathfinder Jr. is available for vessels equipped with 32-volt DC, 110-volt DC, 220-volt DC or 115-volt AC power systems. Power consumption in all cases is less than 750 watts.

In describing the new equipment, Ray C. Ellis, Raytheon vice president, emphasized that the Mariners Pathfinder Jr. is not merely a smaller version of Raytheon's Mariners Pathfinder for larger vessels, but it has been specifically developed for small craft. It has been designed by the same marine electronic engineers who also designed the large Mariners Pathfinder.

During the past six months Raytheon's Mariners Pathfinder Jr. has been in use on the *Eileen Ross,* a Boston harbor tug; *Skookum Chief,* Puget Sound Ferry; *Sea Lion,* a seagoing San Francisco tug; *Barnacle Bill,* a supply and personnel boat operated by the Shell Oil Company to service offshore petroleum operations in the Gulf of Mexico, and two U. S. Coast Guard 83-foot air-sea rescue vessels operating in Maine and Texas waters.

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Light-weight Fireproofing Cement

A light-weight fireproofing cement, to cover steel beams and other structural members on shipboard or elsewhere, is now on the market. The Eagle-Picher Company of Cincinnati, makers of the product, say that it has only one-tenth the weight of most other materials used in the past for this type of fireproofing.

When applied in a layer only an inch and three-quarters thick, the cement will retard the effect of great heat for three hours. The cement can be easily troweled on without the use of forms. The material also resists spalling or crumbling, retaining this ability even under high pressure fire hose streams if an outer coating of harder material is applied as recommended.

Brochures describing the fireproofing material may be obtained by writing to the Eagle-Picher Company at Cincinnati.

One Side for Thumbs

The Mondie Bar M All Purpose Mechanic's Hammer is two hammers on a single handle, one head of drop forged steel and the other of rubber. The hammer is particularly valuable in light or heavy work where surfaces of material must not be dented or damaged. The medium-hard, Duro Rubber Head, pressure-locked on a drop forged steel base, has a calculated low blow-recoil factor, and can do heavy work without denting or peining the material being struck. The metal head is of tough, drop forged steel. Bar M Hammers are available at present in the 40 oz. size only.

For literature describing the hammer, write the Mondie Forge Company, 10274 Berea Road, Cleveland 2, Ohio.

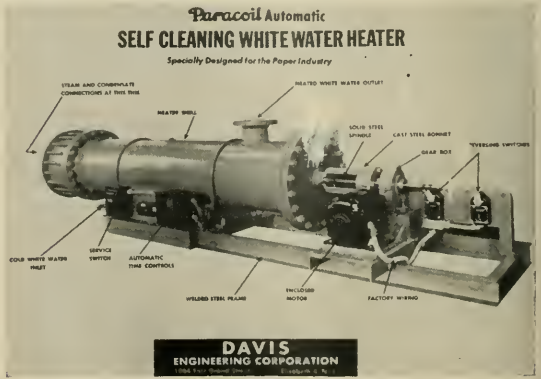
Everclean Paracoil White Water Heater

Heat exchangers that are automatically cleaned at predetemined intervals and are, therefore, described as "Everclean Paracoils" are illustrated in a new bulletin (No. 190) just issued by Davis Engineering Corporation, 1064 E. Grand Street, Elizabeth, New Jersey.

The bulletin covers the application of this exchanger as a white water heater, a process requirement of the paper-making industry, but it applies with equal value to any process where surface fouling may exist, and it would be preferable to maintain a continuous state of cleanliness.

The bulletin is fully illustrated as to assembly and detail, and contains a table of dimensions and sizes.

The illustrations show how the fluid passes through the shell of the exchanger, its flow directed by cross baffles which double as tube cleaners and automatically at predetermined intervals, or manually at the operator's volition, move along the tubes and scrape from them any fouling accumulations which re-enter the flow stream from which they may be removed by strainers if necessary.



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Propeller Design, Etc.

(Continued from page 59)

successful condensers and not on mathematical formulae.

"Now, how about the propeller question. Any volunteers?" There was a dead silence. Then Farran continued.

"In my senior year at college where I was finishing up a course in Marine Engineering and at the end of a series of lectures and examinations on the marine propeller I asked the professor almost this same question. His reply astounded the class. 'Farran,' he said 'nobody knows how to design a perfect propeller! Much of it is a matter of educated guessing. There never has been a ship launched but that after a year's operation, the efficiency of the plant could be improved by a change in the propeller. Many ships after some experience and testing go into dock and have changes in the propeller. You see, the propeller is the only place that the gear ratio between the speed of the ship and the shaft can be adjusted, and the speed of the ship is never accurately known for a given horsepower. Remember that the engine delivers a given horsepower only if you let it run up to a given speed. If you hold it down to less speed it gives you less horsepower.'"

McCoy's eyes popped open in astonishment. He blurted out with the fire of a heated argument in prospect: "And you mean to tell me, a chief marine engineer with 14 years of practical deep sea-going experience, that they don't know how to figure a propeller in this enlightened day of science and engineering?"

Farran replied. "Yes, Mac, and you can win a Nobel prize if you show us how to do it. Let's start out. We have an engine of say 1000 hp. What size propeller will it swing? You cannot start out your propeller design without some idea of what thrust you want it to give. So we try to figure the thrust from the horsepower," Farran wrote on the blackboard. (Fig. 1.). "So, the thrust is 321 times the HP divided by the knots. What then is the speed?"

"Well, let's just assume a speed," McCoy said.

"Oh, no you don't, Mac. You cannot cheat on mathematics. It must be the speed at which this horsepower will drive this ship. And don't assume the ship either. You must design the ship so that this power will drive it at the speed you want. You must include weather, condition of bottom, lines of hull and a dozen other factors. We had best just go to the records and see what ships have been built and what their power and speed was. If you will design the ship that makes 10 knots with 1000 hp. then the thrust is 32,100 pounds. Now another fundamental formula is this." He wrote again (Fig. 2). "The root of 32100 is 179. Dividing by 22 gives a diameter of about 8 feet 2 inches, or by 28 gives a diameter of 6 feet 4 inches. Which it is depends on ratio of the blade area to the area of the blade tip circle, and to pressure on the blades, which can vary from 7 to 15 pounds per square inch, which in turn varies with the slip you can afford to have and the efficiency you want, and also with the pitch and many other factors. Books have been written on the subject, yet today propellers are being changed in diameter and number of blades because from tests, not figures, there is an improvement. The marine engineer and propeller designer are learning things about stream flow from the airplane propeller designer and his tests. We now know that a bump, dent, nick or bent edge the size of your little finger nail will consume dozens of horsepower besides being noisy.

"We have to adjourn this seminar as some of you have the 2000 watch. George, will you transcribe your notes and the sketches and write to Dagoberto about this meeting?"

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Pacific Marine Review

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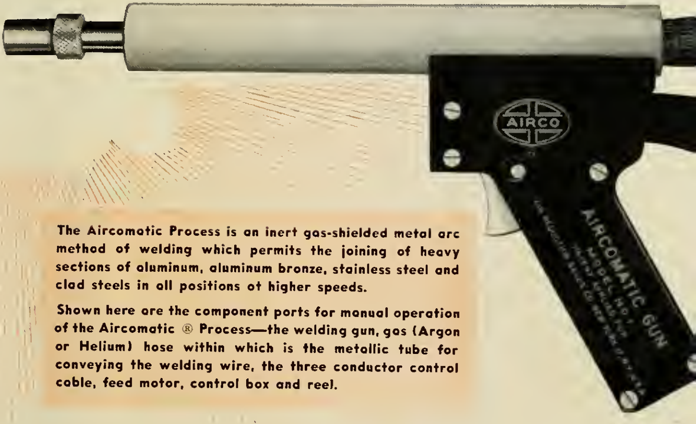
APRIL 195

"AIRCOMATIC"® WELDING



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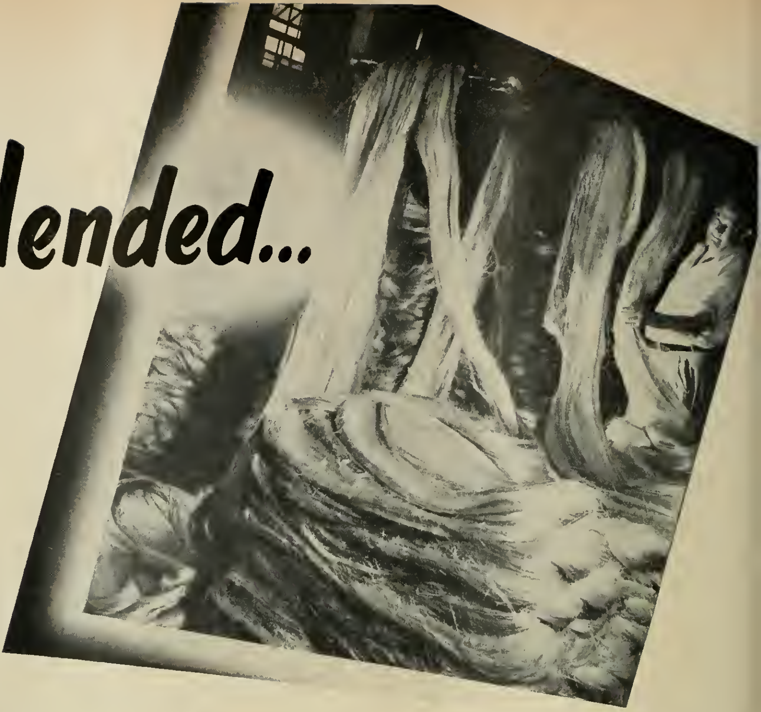

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Pacific
MARINE
REVIEW

Our Industry is Self-Rising

SOMETIMES running into a dead end is good; it is a fair warning that we are on the wrong route. A business lull, however, does not present a dead end, but an opportunity to break out in one or many new directions.

The range of activities in the shipping industry is so broad that some branches of it can be highly prosperous while others are idle. The ups and downs of ship operating and ship building are traditional, but a mean level is eventually reached which satisfies many, discourages some, and inspires others to build on what they have.

There is an odd thing about the present lulls in ship repair yards—*some* repair yards. They are brought about by the high quality of construction or conversion of our present fleet. The tide is about to change, though, and there is a noticeable increase in both voyage repairs and the adoption of improvements. It is this adoption of improvements which suggests that the industry has within it the power to raise itself up. Competition from abroad will force every possible betterment that will result in economy and safety of ship operation, and a thousand ships, plus eighty thousand work and pleasure boats on the Pacific Coast alone, will take a lot of improving.

It has been said that the improving of ships is a slow process. No doubt this is true, but the reasons have been sufficient. Now, however, the incentive is great enough to inspire the yards and the manufacturers to bring out their best selling efforts for the adoption of cost-reducing devices. These will range from propeller corrections to radar, from cargo handling equipment to soot reducers, from hull protection to stabilizers. The opportunities are unlimited.

Perhaps happily for this basic industry the day of those with feet firmly planted in the clouds of government assistance is passing, and the self-help principle is beginning to assert itself. Those who merely reach for what the other fellow has may find him reaching too.

Beginning in the June issue of *Pacific Marine Review* there will appear a series of articles on the development of ship traffic for the port cities of the country and especially those that benefit from intercoastal and coastwise shipping.

The "Stanvac Wellington"

Moore's Yard Completes Big Overhaul on South Pacific Tanker

BECAUSE she was brought across the Pacific from Indonesia for inspection and overhaul, special interest of West Coast maritime people has been directed to the Standard-Vacuum Oil Company's tanker *Stanvac Wellington,* on which the Moore Dry Dock Company has just completed a nice job for General Petroleum Corporation. Advisory Chief Engineer Charles A. Ruggerio was loaned to the operators and flew out from New York to Sumatra to bring the ship to the Oakland yard, and Superintending Engineer Ray Jones of General Petroleum supervised the work. C. E. Dole is manager of the Marine Department at San Francisco.

Group of officers of "Stanvac Wellington." Capt. A. Rubino (below) with his Second Mate, Third Assistant Engineer, Jr. Mate and Chief Mate.

Charles A. Ruggerio, advisory chief engineer, loaned to Company to fly to South Pacific to bring "Stanvac Wellington" to Moore's Yard from Sumatra.

The *Stanvac Wellington* is a 500 foot vessel of 16,725 tons deadweight, built by Sun Shipbuilding and Dry Dock Company in 1941. Her power plant consists of two Babcock & Wilcox water tube boilers, with Westinghouse turbines developing 4400 shaft horsepower through double reduction gears to a single screw.

The vessel had been in the South Seas for quite some time, and there had developed a long list of required repairs, renewals, and replacements. Also, there were some important betterments decided upon.

This constitutes a reminder that, as pointed out elsewhere in this issue, there are many hundreds of ships in the American Merchant Marine which have not had major overhauls since they were built or converted following or during the war, and all of which will need more or less of shipyard work during this year. Betterments will be in order on many of them, as new devices and processes are required in the interest of efficiency or economy of operation, or of safety at sea.

There were some 123 items of servicing or betterment originally specified on the *Wellington,* and this list was augmented as the work progressed.

Under betterments there were included the installation of an emergency 60 KW General Motors diesel, with General Electric generator set, complete with switchboard, parts, batteries, muffler exhaust pipe, etc. This, with the necessary deck stiffening, was installed in a new steel deck house on the after boat deck, port side.

A complete Sperry radar set was installed, and in this connection there was provided a 230 volt D.C. input, 115 volt A.C. 60 cycle output converter, the power supply coming from the vessel's 230 volt D.C. circuit. A 35 foot steel mast to carry the radar antenna was installed above the pilot house, and fitted with a working platform and access ladder.

Another improvement in equipment is the substitution of two motor-propelled 24 foot 37 passenger lifeboats for oar-propelled 22 foot 31 passenger boats. Davits, chocks, foundations, etc. were relocated to handle the larger boats.

New ranges were installed in officers' and crew's galleys.

Every part of the ship was inspected, and all necessary and many anticipated repairs were made. Fresh water compartments and tanks were wire brushed, washed and painted or cement coated; cargo tanks were tested and repaired and steam and other piping repaired or replaced.

The boilers and turbines were found to be in excellent condition. New floors were laid in the boilers, using insulating brick and firebrick. Remote tubes were lanced, soot blower elements removed and inspected, and valves reseated or repacked. The turbines were opened up, and where necessary the rotors taken to the respective manufacturer's local shops for testing and cleaning.

Condensers, generator turbines and governors were opened up, tested, and repaired where necessary. Main and auxiliary pumps, condensate pumps, fuel oil and lube oil pumps, bilge pumps, fire and general service pumps, main feed pumps, bilge and sanitary pumps, and stripping pumps were opened up, overhauled, or repacked or adjusted as needed. Fire equipment was inspected and renewed. Many of the motors were removed for cleaning, undercutting of mica, rewinding of armatures, or turning of commutators. The same with motor generator sets. All instruments were checked.

The ship was drydocked for cleaning and painting. The bottom painting consisted of one coat of anticorrosive to seams and butts, and from keel to 18 foot draft line one coat of anti-corrosive and one coat of anti-fouling paint. Two coats of Apexior in way of

The "Stanvac Wellington."

rudder stern frame. From 18 foot draft line to 30 foot draft line two coats of red boottopping.

Upon completion of repairs, a four hour dock trial was given the vessel by the vessel's personnel, after which she sailed, in fine condition, for her South Seas range.

The entire job was a credit to the Moore yard, although there was little opportunity for any of the fine joiner work in which the yard takes special pride.

Reorganization of Maritime Commission

President Truman's plan No. 21, for the reorganization of the Maritime Commission, will become effective May 15, unless disapproved by Congress before that date.

In the words of the President, "This reorganization plan provides for a small Federal Maritime Board and a Maritime Administration in the Department of Commerce to perform the functions of the Maritime Commission, and abolishes the existing Commission. It transfers to the Board the regulatory functions of the Commission and definitely guarantees the independence of the Board in the performance of these functions. In addition, it vests directly in the Board the determination and award of construction and operating differential subsidies. In the performance of its subsidy functions the Board will be subject to general policy guidance by the Secretary of Commerce. The Board, however, and it alone, will determine to whom subsidies shall be granted and will make and award the subsidy contracts. Its actions therein will be conclusive and will not be subject to modification by any other agency or officer of the Department of Commerce. The other functions of the Maritime Commission, including carrying out the subsidy agreements made by the Board and administering the various operating programs, are transferred to the Secretary of Commerce for administration through the Maritime Administration. Thus, the plan provides for each of the two types of functions now vested in the Maritime Commission the type of organization best suited to its performance. At the same time, the plan will facilitate coordination of maritime policies and programs with other related policies and programs.

"The division of functions under this plan conforms directly to the recommendations of the Commission on Organization of the Executive Branch of the Government. While the award of subsidies is a promotional rather than a regulatory function and might logically be assigned to the Maritime Administration instead of the Board, its impact on the shipping industry and on individual carriers is such as to make desirable the deliberation and combined judgment of a board. Accordingly, I have adhered to the recommendation of the Commission on Organization that this function be vested in a multiple body rather than a single official. Likewise, in line with the recommendations of the Commission, the plan assigns the determination of the over-all route pattern to the Secretary of Commerce.

"The Maritime Board will consist of three members appointed by the President with the consent of the Senate for overlapping terms of 4 years. Not more than two of the members can be of the same political party. The Board, therefore, will be a smaller and more wieldy body which can function with greater expedition and efficiency than the existing five-member Commission. The Chairman will be designated by the President from the members of the Board and will be, ex officio, the Maritime Administrator and as such the head of the Maritime Administration. The plan also provides for a Deputy Maritime Administrator appointed by the Secretary of Commerce under the classified civil service. After investigation I have found, and hereby declare, that by reason of the reorganization made by this plan, it is necessary to include in the plan provisions for the appointment and compensation of the members of the Federal Maritime Board and for the appointment of the Deputy Maritime Administrator.

"In making the Chairman of the Federal Maritime Board the Maritime Administrator, the plan adopts an arrangement substantially similar to that which prevailed during the war, when the same individual served as Chairman of the Maritime Commission and head of the War Shipping Administration. This arrangement will have important advantages. It will facilitate cooperation between the Board and the Administration on matters of concern to both. Also, it will avoid dividing the personnel of the Maritime Commission, since the Chairman of the Board will supervise the personnel assisting it in the performance of its functions, as is now the case in the Maritime Commission, and in his capacity as Administrator he will have charge of the personnel carrying on the work of the Maritime Administration. The plan provides for the joint operation of the officers and employees under the Administrator and Chairman as a single body of personnel. The maintenance of a unified staff is essential for efficient and economical administration because many of the technical and professional personnel, such as ship designers and attorneys, now assist the Maritime Commission on problems of subsidy determination and also participate in the subsequent administration of subsidy agreements and in performing nonsubsidy functions.

"The inclusion of the new Board in the Department of Commerce will permit the use of the administrative services of the Department. More important, it will eliminate the necessity of splitting the personnel of the Maritime Commission between the Department and an outside agency. In addition, it will relieve the President of having to handle relations with a separate maritime agency."

Welded Aluminum Tripod Masts

CONSTRUCTION and installation of lightweight aluminum all-welded tripod masts aboard Navy radar picket ships is the latest in engineering accomplishments for the San Francisco Naval Shipyard.

The new-type masts compensate for the increased amount of weight being added to the radar equipment aboard destroyer-type picket ships. To off-set this increased weight on the mast, the new aluminum mast is constructed in the form of a tripod. With the addition of two horizontal braces, cable and other antenna wires, the new mast is capable of supporting the tremendous equipment load and at the same time withstand the terrific side stress brought on by a ship's roll and pitch.

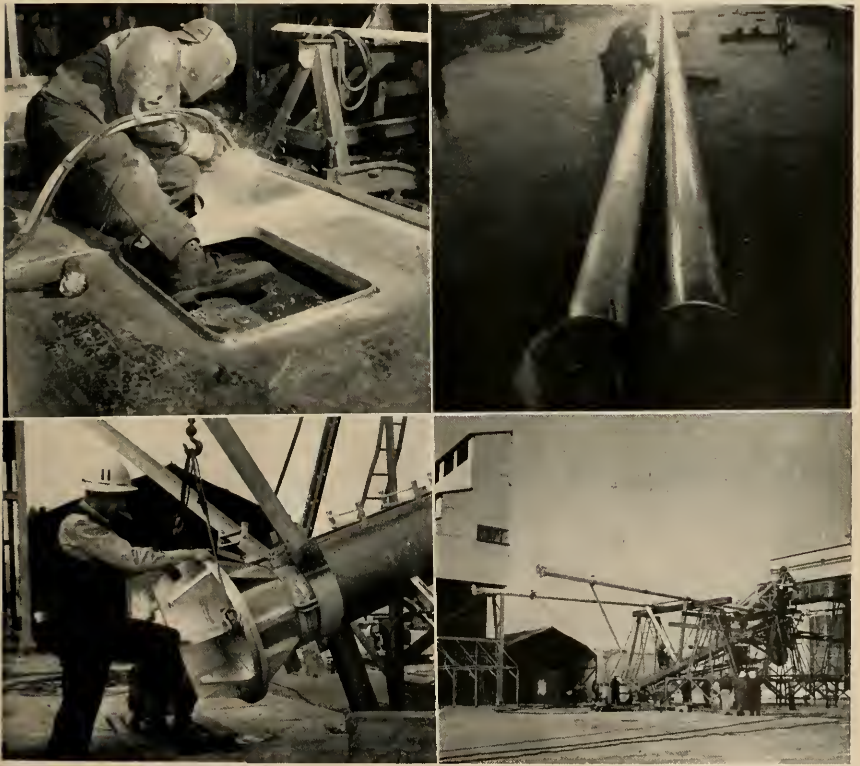
Construction and installation of these new type masts makes for exacting care for those doing the actual work—from the designer to the shipfitter, from the admiral to the ensign.

To make the main tripod leg, 10-foot lengths of ⅜-inch aluminum (standard aluminum alloy 61ST6) plate are rolled into 20-inch tubing and longitudinally welded. Next, the tubes are butt-welded together to make up the mast's 38-foot height.

Twenty-foot lengths of ¼-inch drawn aluminum tubing (diameter 10¾-inch), butt-welded, comprise the two smaller (but longer) legs of the tripod mast.

In all welding on the masts, welders utilize the shielded, inert gas electric arc.

Two radar antenna platforms are attached as a unit



Upper left: Welder with high speed Aircomatic welding gun; and right: 38-ft. aluminum tubes formed by welding 10-ft. lengths of ⅜" sheet, followed by butt-welding. Lower left: Fitting the base to the main leg; and right: Assembled tripod ready for the ship.

Four stages in the mounting of the tripod mast on a destroyer.

Upper left: The tripod about to be raised by giant crane, to be placed on barge and from the barge raised to the deck of the ship.

Upper right: The tripod being lowered so that it straddles the ship's forward stack.

Lower left: The mast being lowered to its permanent position.

Lower right: Tripod masts in place on two destroyers at the San Francisco Naval Shipyard.

to the tripod. Finally wire and other accessories are added with a coat of Navy gray over a primer undercoat of zinc chromate and the mast is ready for installation by yard workers.

The fully assembled tripod mast is carried by a giant crane and barge to the ship. The 38-foot main leg is set on and bolted to the stub of the steel mast and its small legs spread-eagle the ship's forward stack to rest on ½-inch deck reinforcing inserts.

From the initial rolling process, through fabrication, to actual installation, takes the San Francisco Naval Shipyard eight weeks. Eight weeks and the ship is ready for active sea duty, ready to make the radar screen of our coasts the most impenetrable.

Aircomatic Welding
– A Production Tool –

IN making the installation referred to in the above article on Aluminum Welded Tripod Masts, the welding apparatus used was one of the key metal working developments of the postwar period. This is the *Aircomatic welding process. This new invention, first announced at the 1948 National Metals Show, represents a high development of welding as a rapid, flexible, production tool. With it, quality weld metal is deposited at extremely high speeds, in all positions, with excellent efficiency, and economy which often approaches the remarkable.

In the Aircomatic process, continuous filler wire electrode is used, fed through a "gun" or an automatic welding head, via a specially designed nozzle which sur-

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* Registered trade name.

rounds the end of the electrode, the arc, and the weld zone with a blanket of inert monatomic gas. Current densities on the small diameter wires are very high; burn-off rates are correspondingly high; and deposition, whether measured in pounds/hr. or inches/min. is very rapid.

It may be realized even from such a capsule description that the process is a new and different welding method. In manual operation it has the all-position flexibility of stick electrode welding, without the low-efficiency operation of electrode changing. Like Heliwelding, it has an inert-gas shield, eliminating fluxes, shielding the weld but permitting full visibility of the arc and the pool. Like automatic welding, it has the high speed, efficiency and deposition economy of continuous filler wire feed, with the added advantages of position welding and visible arc. Comparison with any one of the older processes, however, is unfair both to the old and the new methods, for each is functionally different—each has a specific purpose and a group of applications for which it is the answer. The key to the usefulness of the Aircomatic process is its value as a rapid, high-production welding tool. It is primarily suited to mass-production or large-quantity operations, and when a great many parts, or a great amount of weld metal appear as production requirements, the Aircomatic process is a logical candidate for the job.

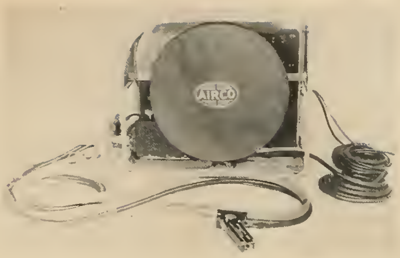


Figure 1. Complete manual equipment for Aircomatic welding wire supply, control circuits and feed mechanism are carried on the separate portable frame. Wire, gas and current reach the manual "gun" by flexible cables.

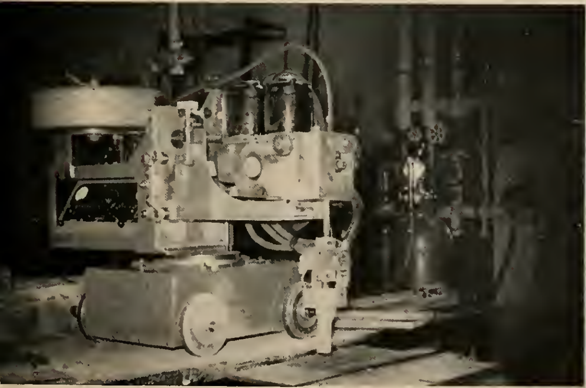
One possibility, resulting from the high speeds and efficiency of the process, is that it may well smash a few of the remaining barriers to the extension of welding. By offering such remarkable speeds, and in many cases greatly improved weld metal properties, this new process has already opened interesting avenues of investigation for new uses of aluminum bronze welding; for reclamation of diesel engine pistons; and for similar ideas. The possibility is apparent that, rather than taking work from other welding methods, this process may very well create, instead, new work for welding as a whole.

Equipment

The process may be applied either by a manual welding "gun," a fixed-mount "gun" for mechanized work, or by means of an automatic welding head. In any type of equipment, automatic control of arc voltage, and of arc length, is a vital factor in the operation. In the automatic equipment, wire feed speed is changed with the aid of an arc-voltage control by a change in electrode-to-work distance; in manual equipment the burn-off rate of a constant-speed wire is changed. The fundamentals

Left: Figure 2. An automatic Aircromatic welding unit is a compact assembly mountable on a Radiagraph for a travel carriage, with simple control circuits and trouble-free operating mechanism.

Right: Figure 3. All types of aluminum fabrication in thicknesses from $1/8''$ upwards, are suitable applications for the Aircomatic process. The parts being welded here are structural members for a heavy trailer truck frame. Stainless steel, aluminum bronze, and other materials are also handled by the process.



of the two types of equipment are similar otherwise. Wire is fed from a reel through drive rolls, passing through an electrical contact in the center of the shielding nozzle. At the nozzle, the wire enters the blanket of shielding gas, such as argon or helium, and then the arc.

The automatic equipment follows this basic pattern very closely, but the manual equipment, as illustrated in Figure 1, has several distinctive features. The wire is fed by rolls at the entrtance end of a flexible cable, which also carried the shielding gas. It is pushed through the cable, and the current is picked up at the exit of the welding gun. This gun, which resembles a large automatic pistol, is equipped with the necessary operator controls for welding, and provides flexibility and ease of handling for all-position welding. All manual welding equipment except this gun is contained in the "trailer," a compact assembly at the other end of the flexible cable.

Weldable Metals

In these paragraphs, little or nothing has been said about the materials which can be welded with the process. Practically all materials can be welded—that is, the process has been successfully tried in the laboratory on all the commercially important weldable metals with encouraging prospects for a constantly increasing field of usefulness. It is at present, however, commercially available only for aluminum, chrome-nickel stainless steels, and aluminum and silicon bronzes. As more or less minor sidelights to the welding of stainless steel, nickel-clad steels are also commercially weldable, as is the S-590 heat-resistant jet-engine alloy.

The process is finding wide use because of its suitability for high-production requirements, and the resulting economies and increased efficiency. Fabricators of aluminum, bronze, stainless steel and less important special metals have already begun to feel the effects of a lower cost, faster method of welding, and as the process becomes more widely applied, and is extended to other metals, even greater effects are sure to be felt. It is truly a production tool, helping to fill today's need for faster production, more production, at lower costs.

"Vera M" — New G-M Powered Tuna Clipper

SAN DIEGO recently welcomed the addition of a new tuna clipper to her fishing fleet. She is the *Vera M*, built by San Diego Marine Construction Company and now engaged in fishing off the coast of Southern California.

The vessel is 109'9" long overall, with a beam of 27', a loaded draft of 14'8", light draft of 13'3", and a cargo-carrying capacity of 213 short tons. The hull is of all-wood construction, with a one-timber keel 14" x 16" x 102'. Keelson is 14" x 14" x 78' of one timber, plus a 22' scarfed jointing piece. There is a forged-steel $5\frac{7}{16}$" shaft, 43'1¼" long, with four heavy-duty, babbitt-lined spring bearings. The tail shaft is 20' long of 6" diameter bronze, with ½" thick bronze liner.

Power is provided by a 600-hp., 6-cylinder, 2-cycle General Motors Model 6-278A diesel engine with reverse-reduction gear unit.

Ammonia compressors provide necessary refrigeration—four eight-ton for fish storage and one two-ton for the galley.

Fuel oil capacity is 28,396 gallons; 868 gallons of lubricating oil, and 1700 gallons of fresh water can be carried.

Two 10" vertical bait pumps, direct-connected to 20-hp. motors, circulate sea water to keep bait alive. This bait, mostly anchovies, and small sardines, is used as a lure—thrown into the ocean, but not baited on the barbless hooks. While both bait pumps are used at times, usually only one is operated.

There are two 3" x 3" condenser pumps which are direct-connected to 5-hp. motors and are used to cool the ammonia gas back to a liquid. Fourteen 2½" x 2½" 200-gallon-per-minute brine-circulating pumps, direct-connected to 1½-hp. motors, are installed in the shaft alley and are used for circulating the brine which dissipates the heat from the fish.

Other equipment consists of the following:

One 3" x 3" fire and bilge pump, direct-connected to a 5-hp. motor

One 3" x 2" general service pump, direct-connected to a 3-hp. motor

One 41-gpm. fuel-oil transfer pump, direct-connected to a 2-hp. motor

One 5-gpm. fuel-oil service pump, direct-connected to a ½-hp. motor

One 10-gpm. lube-oil service pump, direct-connected to a 1-hp. motor

One 275-gph. fresh-water pump system and pressure tank, with a ¼-hp. motor

One complete set of lube-oil and fuel-oil hand pumps for stand-by service.

A 2700-c.f.m. ventilating system for the engine room

One CO_2 fire-smothering system, consisting of six 50-lb. bottles

One set of hand fire extinguishers

One 12" searchlight

One fathometer

One 250-watt radio telephone

One oil-burning galley range

One 14' skiff

One 17' power boat.

There are fifteen fish wells—twelve below decks and three on the main deck. Each bait tank and well has two water-tight swimming-pool-light fixtures, also necessary screens and control valves.

On deck, there is one main mast and boom with an electric cargo winch and two gypsy heads driven by a 5-hp. motor. One anchor windlass, with two gypsy heads, one chain cat for 90 fathoms of ¾″ stud link chain, is operated by a 10-hp. motor. The vessel is supplied with two anchors—one weighing 500 pounds and the other 700 pounds.

One set of quarters for eight men is in the after deck house on the boat deck. Another set for four men is in forward part of the same deck house, under the pilot house. Construction of both is waterproof plywood, with mahogany trim. Ample locker space for each man and leather cushion seats are provided. The crew's shower and toilet room is on the main deck aft of the starboard engine room door. The captain's quarters are in the starboard side of deck house, amidship on boat deck; and quarters for the chief engineer are on the port side amidship, with adjoining shower room, toilet and lavatory. Each room has a buffet, table, leather settees and ample locker space.

Forward of the captain's room is a mahogany-trimmed chapel for religious service and worship. On the port side, forward of the chief's room is a special squid locker for barbless hooks and lines.

An item of interest in connection with this vessel is that while the average engine room length with a 600-hp. heavy duty engine is from 26′ to 30′, the *Vera M* is only 18′9″ in length with ample room for all equipment.

New San Diego tuna clipper "Vera M." is powered by a General Motors Model 6-278A Marine Diesel Engine.

A. C. Diesel Electric Propulsion

By HARRY C. COLMAN
Manager of Marine and Aviation Engineering,
Westinghouse Electric Corp., East Pittsburgh, Pa.

THE first Diesel-electric ship propulsion plant installed in this country was over thirty years ago. Since that time more than 1,000 ships, including almost every type, have been equipped with this type of propulsion. Almost all of these drives have utilized direct-current electrical equipment. Only during the last ten years has much progress been made in adapting alternating current machinery to Diesel-drive.

This system makes it feasible to construct large propulsion plants utilizing a number of medium high speed diesels. The normal system is applicable to vessels of larger size with propulsion plants of about 7500 SHP and above.

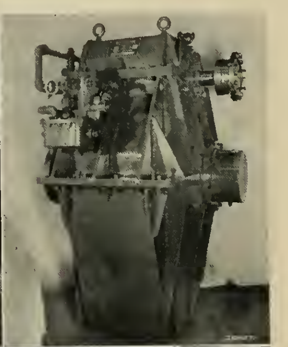
The first such system using synchronous motors built in this country was for the submarine tender *Sperry* and was installed in 1943. The accompanying diagram shows the number of units and arrangement in the vessel on this installation. The general scheme and method of operation is the same as would be used on a merchant vessel, except that there would normally be only a single screw and a single engine room. The equipment on the *Sperry* included, for each engine room, four 1150 KW Diesel-generator sets supplying power to a 5900 HP, 54-pole, 2400 volt, 139 RPM, synchronous propulsion motor, together with the necessary control and excitation motor-generator set.

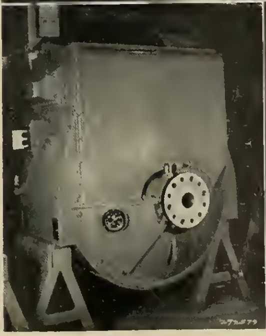
The general operation of this system is similar to that used on turbine-electric A. C. drive, which has been described in many articles. Complete speed control is obtained by controlling the frequency by adjusting the engine speed over a range of about 25% to 100% rated speed. Since there is a plurality of generators in this system, they are connected in parallel to a bus which feeds the propulsion motor. Reversal on this installation is carried out by first reducing the engine speed to 25%, then applying dynamic braking to bring the motor to near zero speed quickly, and then after a short period, reversing the connections to two phases of the motor, accelerating it in the opposite direction, and then applying field to synchronize with the generators. Automatic torque control is provided so that during maneuvering the maximum torque output of the engines at idling speed may be utilized without stalling the engines.

The first A. C. installation with which we are familiar, made in this country, was in 1940, when an unusual and special drive was installed on the tuna clipper *Challenger*. The

Top: Propulsion Motors of M.S. "Challenger" installed in vessel.
Bottom: Propulsion Generator for "U.S.S. Sperry."

Top: Reduction Gear, "Challenger."
Bottom: Propulsion Motor, "Sperry."





Abstract of talk presented on March 2 at Long Beach, Calif., before the Society of Port Engineers.

accompanying diagram shows the arrangement and ratings of the machinery. This special system afforded a flexible plant, in which the generating equipment capacity could be divided as needed for the various conditions of operation involving propulsion to and from the fishing areas, reduced speed operation during catching bait and fishing, and the refrigeration requirements. The vessel made several successful fishing trips, and then was taken over by the Navy and had a record of excellent performance throughout the war in the South Pacific.

Development of this type of propulsion was started in Germany as early as 1937, when a ship was built for the Hamburg American Line, incorporating a 3-engine generator layout, a 6800 HP synchronous motor, and a 900 HP squirrel cage induction motor for maneuvering. Later, the Germans built three more large ships of similar type, except omitting the maneuvering motor. One of these vessels was a 15,000 SHP total twin-screw ship. Apparently the Hamburg American Line was convinced of the feasibility and advantages of this type of drive, because they ordered a total of four ships.

The Mississippi Shipping Company took bids last year on a passen-

(Please turn to page 80)

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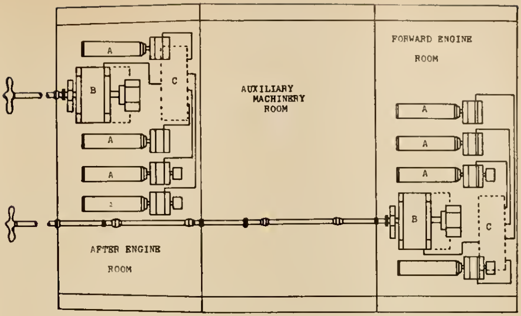
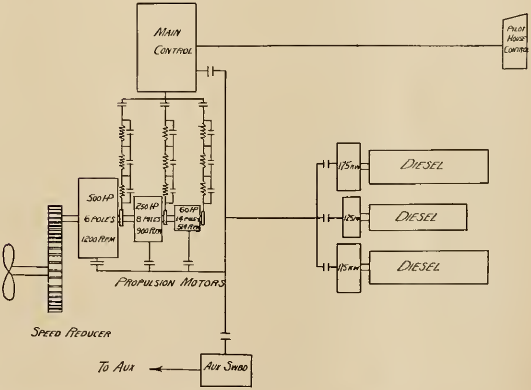


DIAGRAMMATIC ARRANGEMENT OF PROPULSION MACHINERY
PLAN-LOWER LEVEL
U.S.S. SPERRY - AS-12.

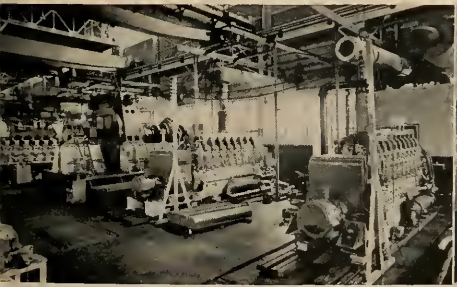
A = Propulsion Diesel Generator Sets
B = Propulsion Motors
C = Control Boards (located on upper level).



Top: Diagram of machinery layout on "Sperry."

Bottom: Diagram of machinery layout on "Challenger."

View of Propulsion Motor and two of the Generator sets for the "Sperry" on test at plant of Cleveland Diesel Engine Division, General Motors Corp.



Propulsion Control in "Sperry."

Electrolytic Descaling of Tanks

EDITOR'S NOTE:

If the cost figures for tank descaling, as given in this article, are approximately correct, they will permit the descaling of many tanks now left untreated and the result will be, considering the improved tank coatings now available, a cleaner fuel or cargo and a longer life ship.

RESULTS of further experimental electrolytic descaling of cargo gasoline and oil tanks, as conducted aboard the tanker *USS Cimarron* at San Francisco Naval Shipyard, have been reported to the Navy's Bureau of Ships.

Electrolytic descaling of rust, corrosion, and other scales have been progressively successful in recent years of practice by various trial and error methods, leading toward some practical commercial uses of the methods. Both in this country and Great Britain, successful descaling of both tanks and such objects as deck plating and corroded superheater headers has been observed.

With BuShips special project funds a full scale operation of this method on the heavily rusted gas and oil tanks of a representative tanker was made at the San Francisco yard. A further objective was to establish procedures for involved factors such as anode design, current time and densities, and to define equipment needed for permanently established Navy descaling stations on all coasts.

Experimenting under direction of Cmdr. H. H. Fox, Jr., assigned to the project from BuShips, were Lieut. George Jones, USN, and Robert D. Miller, chief electrical engineer of the yard.

Their method consisted of supplying power from welding machines to an arrangement of anodes suspended in the tanks to be cleaned. In general, enough current was supplied to give a current density of .235 amps. per surface foot of tank area at a potential of 20-30 volts. Their results, as reported to BuShips, indicate the method practical as well as economical, and that no dangerous hydrogen concentrations were formed.

Use of mild steel anodes and sea water as the electrolytic fluid assured economy of materials for the tests.

The vessel's cargo tank No. 2 (used for gasoline) required two operations, using two types of anodes and two power setups. Results were judged "fairly good" after two "shots." Operation 1 used twelve straight, flat bar anodes, arranged with four anodes getting power from each of three welding machines. It showed clean surfaces parallel tn the anode axes and in the vicinity of the anode only.

Increasing the length and adding extra fins at the bottom of the anodes led to much better and more complete overall cleaning on Operation 2, which had three anodes powered by each of four machines.

For operation 3 (the ship's No. 8 wing tanks, port and starboard) six anodes in each wing tank were divided with three anodes being powered on each of four machines.

An important feature of the test was the proof that a soluble anode of mild steel, rather than an insoluble such as carbon, produces practically no hydrogen and no detectable chlorine. Some molecular hydrogen (an almost negligible amount) could be detected escaping through ½" standpipe vents threaded through holes in the deck. These were installed for three purposes: (1) point of entrance and support for cables suspending anodes, (2) combination vents and standpipes to assure a full tank of electrolyte, and (3) vent points to check for hydrogen every hour. With simple precautions, it is believed welding and burning could be carried on on the deck immediately above tanks being cleaned, if tanks are vented to open deck areas.

Costs of the experiment were kept, and it was reported that costs of standardized descaling by this method could be made very economical.

Experience shows the anodes and electric cable could be used for many repeated operations, although the report was emphatic in its statement that further design changes of the shape and size of anodes is necessary. Using eight 1500 ampere welding machines, or another source of about 12,000 amperes, each centerline tank with its two adjacent wing tanks can be cleaned in 48 hours. Duplication of the setup, with sufficient power source, could proportionately reduce elapsed time for cleaning the entire ship.

The probable cost of descaling an entire tanker is believed to be $1000 for materials and $24,000 for labor, as against an average cost of $65,000 for sandblasting all tanks of the same sized ship.

A special problem of chemical deposits left on the tanks (flakes of calcium magnesium and sodium salts) would of necessity require special cleaning before use of tanks for carrying aviation or other light white gasoline products. Wire brush cleaning or use of a stronger washdown than sea water after cleaning were recommended for this problem. The experimenters also recommended further study to learn if a period of short reversal of current near the end of the process would assist in removing the deposits without affecting the magnetic state of the ship's hull.

Further recommendations for study of establishment of Navy ship descaling stations, and even for shipboard installations aboard moving vessels were made following the tests.

Their conclusion that "the electrolytic descaling method is practical and relatively economical" should merit further study throughout the industry.

1. Welding machine set up on dock ready for the electrolytic descaling operation.
2. The tank hatch showing the entrance of the electric cables.
3. Showing the corroded condition of the tank before the descaling operation.
4. Showing anodes in position for the first operation.
5. The faint rectangular object near the upper left corner is one of several fins added for a second operation, getting into the corners. The smooth surface at the right and lower part of the picture shows the effect of the descaling process on those parts of the tank.
6. Showing the heavy type of scale loosened by the process. High pressure washing finally removed it from corner and remote areas.

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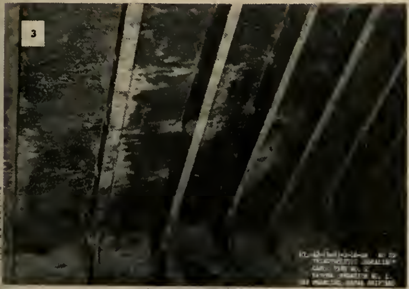

NOTE HEAVY SCALE

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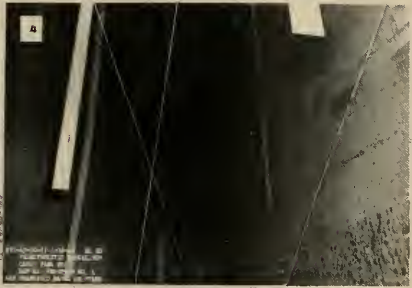
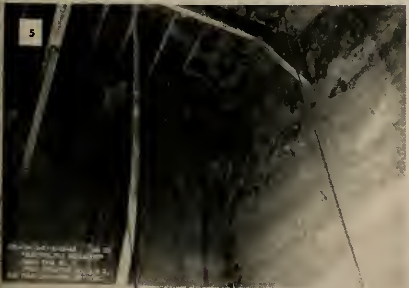
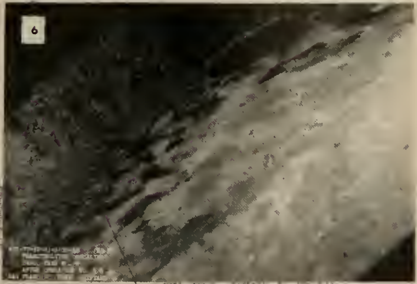


ANODES IN POSITION FOR 1ST OPERATION

5


TOP FINS ADDED FOR SECOND OPERATION
NOTE CLEANING OF TANK SIDES AND OVERHEAD

6


NOTE SCALE LOOSENED [illegible]
HIGH PRESSURE WASHING REMOVED THIS

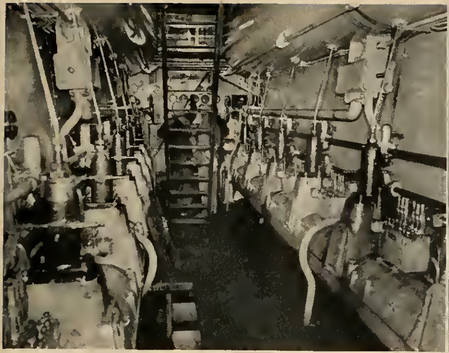
A Big Engine Overhaul

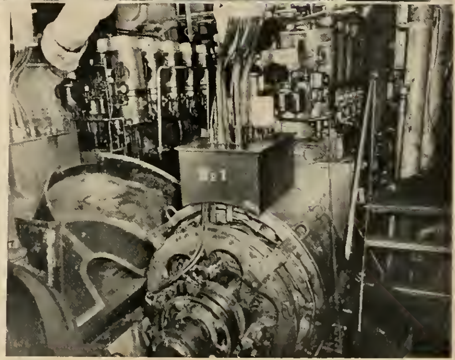
BECAUSE so many of our main cargo vessels are either new or postwar converted, the past few years have seen comparatively few complete engine overhauls. Such jobs may be expected in increasing numbers, until the tempo becomes steady a year or two hence as special 4-year surveys are reached. The work involved in such a repair is of general interest, and a good example is that of the C-2 motor ship *Axel Salen* of the Salen-Skaugen Line, of which Interocean Steamship Corporation of San Francisco is Pacific Coast managing operator. An added point of interest lies in the performance of the work by West Winds, Inc., which has just acquired extensive shop facilities and location in San Francisco formerly owned by General Engineering and Dry Dock Corporation.

In the *Axel Salen* there are two nine-cylinder diesels of 6,000 horsepower. All 18 pistons were pulled from the main engine and dismantled. Three broken cylinder heads were discarded and a complete new block for the port engine installed. Cylinder liners were removed and block surfaces machined with portable equipment. The 36 valves were removed and dismantled and new parts furnished. Main bearings of both engines were removed for inspection. Line shaft bearings, thrust bearings, reduction gears and various pumps and motors were opened for inspection. One of the main engine lube oil coolers was entirely retubed.

The two auxiliary engines were completely overhauled, including the fuel pumps, injectors and governors. Miscellaneous work on the compressors and air tanks, as

Probably few readers will recognize the "Axel Salen" as the former "Sea Witch" (including the photographer, who lived on her for three months!). One of the very first C-2s, she sailed from San Francisco during the war as an Army transport.





Above: West Winds crew at work on the big diesels of the "Axel Salen."

Top right: An "acre of head studs" stands up from the port main engine of the "Axel Salen," undergoing overhaul by West Winds, Inc.

Bottom right: The auxiliaries after overhauling by West Winds.

well as numerous deck repairs were included in the job; and West Winds, who specialize in diesel work, completed the job in nine days of round-the-clock performance.

G. E. Propulsion Equipment For Prototype

General Electric geared turbine marine propulsion equipment will power the U. S. Maritime Commission C3-S-DX1, prototype cargo vessel.

The vessel, for which the Ingalls Shipbuilding Co. yard at Pascagoula, Miss., has the contract, is designed for world trade. According to G-E engineers, design of the propulsion equipment will be in keeping with the forward looking position taken by the Maritime Commission in the general design of the C3-S-DX1.

The single-screw vessel will be driven by a 12,500 horsepower marine geared-turbine. The equipment will consist of a high pressure turbine and a low pressure turbine, cross-compounded to form an integrated unit. Articulated type double-reduction gears will complete the General Electric propulsion equipment. Steam conditions at the main steam inlet will be 850 psi gage at 890 degrees F. total temperature with an exhaust back pressure of 1½ inches Hg absolute. The equipment will be capable of carrying 13,750-shp continuously.

The design will allow these high steam conditions to be utilized for both ahead and astern operation. Special alloy steel will be used as required for the pressures and temperatures encountered.

The condenser is designed to support the low pressure turbine. The combined design of turbines, gear and condenser is co-ordinated to provide a compact, unusually rugged arrangement.

In addition to being designed for operation with the lubricating oil used in most merchant ships, the equipment will also be capable of successful operation with light oil. Operation with light oil will reduce mechanical losses, further increasing the efficiency of the unit.

The machinery will be built in General Electric's turbine plant in Lynn, Mass.

The vessel has a deadweight tonnage of 10,500 tons with a displacement of 15,900 tons. The bale capacity (dry cargo) including deep tanks forward is 560,000 cubic feet.

Safety

—Case Histories of Stevedoring Accidents And Methods Adopted to Prevent Repetitions

By JOSEPH H. TRAVERS

Manager, Accident Prevention Bureau, Pacific Maritime Association

Joseph H. Travers

EDITOR'S NOTE:

The *Pacific Marine Review* had an important part in planning of the Accident Prevention Program in the shipping industry on the Pacific Coast, where Accident Prevention Programs started. As the planning committees worked out suggested programs, we published the proposed codes in detail over and over again and invited all concerned to criticize and suggest improvements. We have been following the progress of the Accident Prevention Bureau of the Pacific Maritime Association and its predecessors since 1927 and believe that the work of the Bureau is worthy of study by similar groups around the country and by labor and insurance officials. The accompanying article, which was prepared by the manager of the Pacific Maritime Association's Accident Prevention Bureau, merits careful reading.

Serious Accidents

Case No. 1

The accident: Gang boss tripped over hatch cover and fell to his knees.

Cause: Poor lighting; failure of man to see hatch cover in his way.

Recommendation for prevention: Improved deck lighting. Use white painted 4x4 instead of battleship grey hatch covers to lay strongbacks on.

You may wonder why I picked this accident to report on. It may not seem to fit the popular conception of a "serious" accident. It seems simple enough. In fact almost inconsequential, except that the gang boss died. Here is the story in more detail. Some of the hatch covers, when the hatch was uncovered, were laid out 'thwartship on the offshore side of the weather deck to lay the strongbacks on. After the strongbacks had been piled there remained about 18" of the hatch cover flat on the deck sticking out beyond the strongbacks and adjacent to the 6' wide fore and aft passageway. It was about 11:00 p.m. of a Saturday night. The lighting on the offshore side was reported to be not of the best. The gang boss was walking forward on the offshore side, tripped over one of the protruding hatch covers and fell to his knees. He picked himself up, told the deck men he was not hurt and proceeded to finish the shift. His gang did not work on Sunday. On Monday he was admitted to the hospital with badly swollen and discolored knees. Twelve days later and exactly fourteen days after the accident, he died. The attending doctor stated, "Death due to multiple emboli and thrombo phlebitis of leg. There was no evidence during his stay in the hospital that would lead us to make a diagnosis of thrombo phlebitis of the leg."

Case No. 2:

The accident: Offshore winch slipped out of gear allowing load to drop to apron.

Cause: Shifting lever on electric winch had not been properly secured in low gear position. Vibration of the winch in operation caused the lever to slip out into neutral leaving the winch operator with no control.

Recommendation for prevention: Have gang boss and winch driver inspect gear before starting operation to be sure everything is in proper working order, and that shifting levers are secured.

Does this fit your conception of a serious accident? It did not result in any injury to personnel. Nobody was hurt, but there was a considerable amount of property damage and a lengthy delay in the operation. To my mind this occurrence is worthy of attention because there are so many accidents caused by just this same lack of attention to details on the part of supervisors and workmen.

This article was prepared for presentation at the twentieth Anoual Safety Convention and Exposition, Greater New York Safety Council, March 28-31, 1950.

Now for some details regarding this particular occurrence. The heavy lift gear had been rigged by the Navy crew as is customary. The civilian longshoremen came on the job, accepted it as set up, and started to work without checking. They were going to load a 21-ton truck with the jumbo gear at No. 4 hatch. The load was picked up successfully and just as they got it over the bulwark rail the winch slipped out of gear (the shift lever is located about 6′ from the operator's position) and the load came down, teetering on the rail and then toppling over and landing upside down on the pier apron.

Case No. 3:

The accident: Exposure of men to an irrespirable atmosphere.

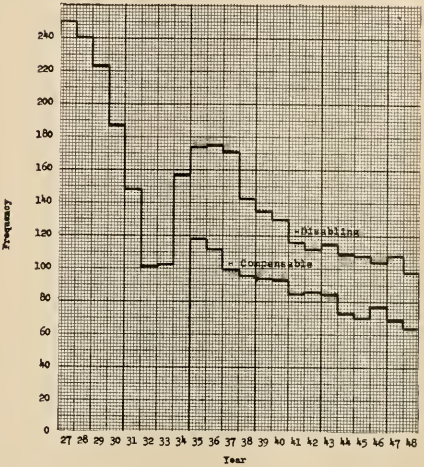
Cause: Failure of management to recognize the seriousness of the hazard and the consequent failure to provide for tests and to control movement of workmen until assured that the atmosphere wos o.k.

Recommendation for prevention: Compliance with Rule 510, Pacific Coast Marine Safety Code, which says, "Where noxious gases may be present in holds or compartments or when ship has been fumigated, such places shall be declared clear of gas by a qualified inspector before employees are permitted to enter."

What happened in this case? Two reefer vans, each loaded with meat and 2½ tons of dry ice as the refrigerant were stowed in the hold of a ship one afternoon and because of inclement weather the hold was covered for the night. Come morning, one-half the hatch was uncovered to stow three additional vans. The walking boss had gone down on top of the van to see how the air was and had just reported it did not seem too good, when one of the longshoremen started from the top of the van down the sweatboards to the lower hold. About half way down he yelled for help and started to have a fit—or so his partners thought. Two of them rushed to help him and when they got there, they too passed out and dropped to the bottom of the hold. Four others, including the foreman, started to their assistance but before they could get down off the van top, they passed out.

The First Mate, wearing the oxygen breathing apparatus that was on the ship, rescued one man. Then the oxygen in his appartus was used up because after he and the Third Mate had made several checks of the apparatus on previous voyages either they had failed to completely shut off the main valve on the apparatus or the valve had a slow leak, and consequently there was almost no oxygen in the bottle when the emergency came. In the meantime someone had called for an ambulance and two arrived without oxygen breathing apparatus. Another call, and the police ambulance arrived, again without rescue apparatus. Finally the fire department was called and they arrived with the proper apparatus and got the men out some thirty to thirty-five minutes after the first had fallen. Result—three dead; the other four recovered.

Longshore Injury Frequencies
Pacific Coast Stevedoring Companies
1927 - 1949



Frequency = $\frac{\text{Number of injuries} \times 1{,}000{,}000}{\text{Manhours worked}}$

Disability Injury—One causing loss of time of 1 day or more.
Compensable Injury—One causing loss of time of 8 days or more.

Did not anyone know that a hazardous situation might develop in this case? Well, they should have. True, the reefer vans were not marked to indicate either that they were reefer vans or that they contained dry ice. But the ship regularly carried them, the cargo manifest listed their contents and the company management as well as the ship's officers were aware that they contained dry ice. They also were aware that after the holds had been closed for some time they had to be ventilated and this is proved by the fact that as they approached their destination they always removed the tarpaulins and hatch covers, trimmed the ship's ventilators in the wind, and started the blowers with which the vessel was equipped. Why didn't they start the blowers and ventilate that fatal morning? One can only surmise, but evidently they didn't think that the dry ice would vaporize that quickly. The stevedoring company also knew that the cargo was not harmless for on the previous trip, while loading, the men had complained of headaches so the blowers had been turned on and all was well thereafter. However, here again there was lack of appreciation of the magnitude of the hazard. As the foreman said afterwards, "I knew it was bad but didn't think it would act that quickly".

On Recommending Controls

The Accident Prevention Bureau is an Association Bureau working for all Pacific Coast stevedoring and steamship companies. We receive reports of all their longshore accidents and we inspect their operations. When requested, we investigate their accidents and we make recommendations for corrections of hazards and control of accidents. However, as we are a staff organization and not in the chain of command of any of the companies, we have no assurance that our recommendations will be carried out. It depends upon the individual companies and the circumstances as to the degree of compliance with recommendations. Therefore, the best I can tell you is what the Bureau feels should have been done to prevent recurrences.

The Pacific Coast Setup

We are attempting accident control on the Pacific Coast, but first let me tell of the stevedoring setup on the West Coast for it differs in some important aspects from operations in the East, and these differences particularly affect the accident prevention problem.

No stevedoring company on the West Coast has regular employees below the supervisory level of ship boss or assistant ship boss, dock foreman or assistant dock foreman. All longshoremen are obtained from a common labor pool with the men being dispatched by the union-operated joint hiring hall. You question that description? True, the contract provides that the hall shall be operated under the direction of the joint labor relations committee, but the dispatchers are elected by the union and controlled by the union and experience since 1935 has clearly shown that the employers' share of the joint operation amounts to the privilege of paying one-half the bills. That is all. Equality of work opportunity for all union members is one of the basic principles behind the operation of the hall. Ship gangs are dispatched as units complete with gang boss so that even the lowest level of supervision is assigned on a rotational basis rather than selected by management for his ability as a supervisor. The normal employer-employee relationships which exists in other industries are totally lacking.

Our stevedore companies labor under the handicap of statutory responsibility to furnish a safe working place. They, except in rare instances, neither own nor control the wharves or piers whereon they work. Nor do they own or control the vessels upon which their work is performed. Basic correction of unsafe physical conditions must be made either by the ship or the terminal owner, and we find considerable reluctance on the part of the contract stevedore to tell the ship that the winches need fixing or that the hatch covers must be replaced before the work can proceed. In fact the stevedore just won't go to the ship with such complaints. They do come to the Bureau with them and we go to the ship and we have a great deal of success in getting them corrected. However, the Bureau with its four safety supervisors in San Francisco, two in Los Angeles-Long Beach Area, two in the Puget Sound Area, and one in the Columbia River Area cannot be everywhere at once nor see everything that needs to be corrected, so a great deal that could be corrected remains uncorrected. In other words the stevedore is pretty much stuck with conditions as he finds them and must use his ingenuity to overcome them in order to provide the required safe work place.

Physical Conditions vs. Human Error

In 1948 on the Pacific Coast we found that in 63.2% of our reported accidents, there were no unsafe physical conditions involved. In those cases where there were unsafe physical conditions, they resulted from:

Unsafe work methods	10.9%
Inadequate work surfaces	6.1%
Poor housekeeping	4.7%
Improper stowage	3.7%
Defective gear or equipment	2.3%
Lack of proper tools	1.9%
Improper guarding	0.6%
Inadequate ventilation	0.2%
Inadequate illumination	0.2%
Unsafe conditions N.O.C. (not otherwise classified)	2.2%
Insufficient information to determine whether unsafe conditions existed	4.0%

Obviously those unsafe conditions caused by unsafe work methods and poor housekeeping are correctible by the men engaged in the work. Thus, only 17% of our stevedoring accidents are due to physical conditions beyond the immediate control of the men engaged in the work. Allowing for those cases where there is insufficient information available, we have 80% of our accidents the result of human error. The human error may be:

1. Ignorance on the part of the supervisor.
2. Wrong judgment on the part of the supervisor.
3. Failure to give instructions.
4. Failure to see that his instructions are followed, or
5. Thoughtlessness or chance-taking on the part of the injured man or his partner.

In connection with this latter, it has been well said that "Some seemingly inexplicable accidents happen to men because they get to thinking about something miles away from what they are doing. They just plain forget where they are."

The Pacific Coast Program

The problem of accident prevention as we see it is primarily one of education. Education of the shipowner and operator and terminal owner and operator, in their responsibility for furnishing safe work places and maintaining them in good condition. Education of the stevedore in the necessity for his undertaking accident prevention activities in his own company, of properly selecting and training his supervisory force, and of maintaining his gear in proper condition. Education of the individual longshoreman and the union officials as to the necessary part they, individually and collectively, must play in any successful accident prevention program.

Our approach to this problem has been on a group basis. The rotational labor situation which I have referred to in reality established the need for such an approach. In our group program we are attempting to control accidents first, through providing safe working places, gear and equipment; second, through the education of management; third, through the education of the workers.

This program includes:

1. The inspection of operations by the Accident Prevention Bureau staff;

2. The use of Area Accident Prevention Committees to carry on the education of management. These com-

(Please turn to page 68)

Another Johnson Line Motorship Coming

THE growing fleet of Johnson Line motorships has been increased by another member, the Motorship *Lions Gate,* launched February 18, in Sweden, Fred L. Doelker, Pacific Coast manager of the Johnson Line, has announced. It is expected that the *Lions Gate* will be ready to sail from Gothenburg on her maiden voyage in July.

The *Lions Gate* carries the naming pattern established by the Johnson Line for its new M S Seattle type vessels using names related to the great ports of the Pacific Coast. The Lions Gate, after which the ship is named, is the harbor entrance of Vancouver, British Columbia. The three sisterships are already in service, namely the *Seattle, Golden Gate* and *Los Angeles,* and additional vessels of the same design will be launched later on.

These special type vessels comprise one of the finest group of motorships operating in the Pacific Coast-European service. They are twin-screw vessels, Diesel powered, with a speed of 19½ knots. They are the speediest craft of their kind transporting products or passengers from the Pacific Coast to Europe. They are of 9,000 deadweight tonnage and have luxurious accommodations for 12 passengers.

Fred L. Doelker
Pacific Coast Manager, Johnson Line

Like her sisterships, the *Lions Gate* has a cargo capacity of 563,000 cubic feet. Of this amount about 95,000 cubic feet is taken up by refrigeration space, including 29,640 cubic feet of freezing chambers capable of maintaining temperatures of four degrees below zero. This assures most favorable transport of perishables including fresh fruits through the tropics.

The fleet, one of the finest group of combination passenger-cargo carrying vessels, is notable for advanced designing, speed, passenger accommodations. The motorship *Lions Gate* incorporates the same radical improvements in cargo handling gear, already familiar to the Pacific Coast on her sisterships, which have been in operation for some time.

Raymond A. Shiner

Raymond A. Shiner, the new manager in Los Angeles for Grace Lines, Inc., and W. R. Grace Company, agents for Johnson Line.

Appointed in 1934 as Grace Line's passenger agent at San Francisco, Shiner was transferred to the New York office in 1935 as assistant passenger traffic manager. Shortly after the outbreak of World War II he was commissioned in the U. S. Army and served for three and a half years in the New Guinea and Philippines campaign and with the 8th Army in Japan.

After his release from the Army with the rank of Major, Shiner was named manager of the Washington, D. C. office of Grace, which position he held until his transfer to Los Angeles.

The World Shipping Pool

By GEORGE L. WILLEY
Major, Transportation Corps, U. S. Army

Major George L. Willey

THE Allied Nations during World War II found themselves fighting a war that involved every major nation on earth, and to support their efforts they organized the World Shipping Pool. Therefore, each nation pooled its ship tonnage which was made available to the Allied powers. To understand the immensity of this project we should remember the Allied Nations touched the shores of the seven seas. As early as 1943, the World Shipping Pool was made up of a great assortment of vessels which amounted to over 63,000,000 deadweight tons of ocean shipping. Every nationality was employed to operate this greatest of fleets, to which each nation had turned over its share of vessels. In August 1945, ship tonnage in the World Shipping Pool had increased to 89.5 million deadweight tons, and of this amount the United States alone controlled 54.1 million deadweight tons.

The World Shipping Pool functioned under the control of the Combined Chiefs of Staff who made all strategic decisions affecting the employment of Allied shipping. However, the interchange of vessels between the Allies was controlled by the Combined Shipping Adjustment Board created in 1942. Under this top command, to further the control of ships, and the routing and transshipment of the necessities of war, were grouped the U. S. Army Transportation Corps, the U. S. Navy, the U. S. Maritime Commission, the War Shipping Administration and the British Ministry of War Transport. These organizations were the operating units in the World Shipping Pool, and coordinated their efforts and know-how to control the thousands of ships from every Allied nation. All this experience during the war proved that if another war should be started, allied shipping will need to be under the control of one organization. Hence, the United States has made the first step in creating the new Military Sea Transportation Service, which calls for the Navy to technically operate all military ocean shipping for this country.

Under the current military unification policy the Army Transportation Corps and the Navy are coordinating to make this plan operative. Even today the Transportation Corps, under the steady guidance of Major General Frank A. Heileman, Chief of Transportation, is giving every consideration and effort to MSTS. At present the Transportation Corps is transferring its ocean shipping to the Navy to organize this newly-conceived organization, and turns over a going organization to MSTS, an organization that filled the oceans with ships to materially assist in winning World War II.

There are several reasons why one sea transport service is of tremendous value during war. It brings the control of a vast number of ships under one organization. It eliminates time wastage and directs the flow of war supplies to critical areas most in need. This the World Shipping Pool did during World War II, and while it was accomplishing that task it also proved the importance of ocean shipping. It proved that an internal coordination among the various operating units within this huge organization was needed to control all Allied vessels.

Transportation has always been a controlling factor in military operations with our own Army, as well as with all armies since the dawn of history. The growing importance of transportation reached a climax during World War I, when our country's war efforts wavered on the brink of disaster because of the lack of transportation facilities to bridge the distances between the sources of supply and the front lines. During World War II the development of ocean transportation reached its peak. It was of great significance to winning the war, and to feeding the starving peoples of the world. It is still the backbone supporting many nations through lend-lease and the rehabilitation plan.

To look into the history and background of the development of our huge ocean shipping program we will take the organizations in the following order: First the U. S. Merchant Marine and the War Shipping Administration—also the part the merchant marine took in America's early wars. We will cover the WSA war time fleet from 1941 to 1945, and finally the part the Army Transportation Corps played in this great unification. All these things made the World Shipping Pool.

The Merchant Marine and the WSA

The American military establishment, in conducting its amphibious operations during the war, was successful because of the preparation made by the merchant marine before the war started, and its administration and control during the war by the War Shipping Administration. No part of the military is more aware of this great effort than the Army Transportation Corps which had the responsibility of controlling the flow of supplies to armies wherever they may have been at war.

Here's how it worked. As was learned in World War I supplies could not arrive in ports in greater quantities than they could be exported, so a dual control system was set up which was exercised through the use of block releases and unit permits. The block releases were issued by the Transportation Control Committee, which consisted of representatives of the Army, Navy, Office of Defense Transportation, War Shipping Administration, and British Ministry of War Transport. The committee met daily in the Office, Chief of Transportation, and its executive and staff were appointed by him. Block releases were released on information as to how much tonnage a port could handle. The Committee was authorized to change the tonnages, require that specific shipments be held or diverted, and direct that embargoes be placed against specific ports. The authority to issue unit permits for all government export freight, except the Navy, was vested in the Traffic Control Division of the Office, Chief of Transportation. Such permits were issued for specific shipments upon application filed by the shippers. The Navy permitted its own shipments, and the War Shipping Administration was authorized to issue permits for commercial shipments, which it accomplished through the Association of American Railroads as an agent. The sum total of unit permits for shipments to arrive at a given port during a given month could not exceed the pertinent block release. The Transportation Control Committee and the Traffic Control Division worked in closest harmony to prevent port congestions. In this way control of the flow of traffic created a steady supply to all agencies.

In this greatest of wars the United States was a member of a fighting team of United Nations. Representing America were three major players: 1. Our fighting forces overseas; 2. Industrial production at home; and 3. The all-important link between them—the World Shipping Pool and the United States Merchant Marine. The Merchant Marine during the war was coordinated under the War Shipping Administration and served in this manner, successfully, all United Nations. A total of over 5,600 merchant seamen and officers are dead or missing as a result of this service.

All American wars have been amphibious. They all called for a merchant marine that could deliver the goods. Many times during our history we have experienced a lack of ships and seamen, but the *need* for this shipping space and men was always there.

The Merchant Marine takes care of our cargo lift—the work that supports our fighting front. The weight of this lift is the weight of battle equipment, food, men, raw materials, fuel and commodities.

Before we delve too far into the activities of the WSA during World War II, let us bring up some facts about American wars in past history and see what this amphibious cargo lift meant to American armies.

Experience in past American wars has indicated that this nation is committed to amphibious warfare on an intercontinental basis. Our industrial production and our resources along with transportation are constantly under the stress of thousands of miles distance from our battlefields, which are near the enemy's arsenals. The actual battle is almost like a great pianist who plays the piano with his finger tips while the great mass of his body is busy supplying them. It takes more brains to support the logistic task of the body than it does to fight the war with the finger tips.

We had amphibious support in the King Williams War at Port Royal. Also in the War of 1812. In Revolutionary days, our military leaders realized the great problem of moving the Army from one place to another. A constant "bottleneck" was the inability to transport troops from place to place so they would be where they were needed. Throughout the War, this hardest and most thankless task was given to the Quartermaster General, the task of scraping together the teams and teamsters, the

Ships of the World Shipping Pool in convoy on the North Atlantic during World War. II. They filled the seven seas.

U. S. Navy Photo

only mode of military land transportation of the time. Nathanael Greene accepted the post of Quartermaster General with great reluctance. His job, in his own words, was "to accelerate the motions of the Army." An example of the seriousness of transportation difficulties faced was the successful movement of the Continental Army from West Point to Yorktown for the final compaign of the War, a distance of 400 miles, which was considered almost an impossibility at that time. Amphibious support had brought the French to our assistance.

The Mexican War was no different. American shipping and ships were required to complete General Winfield Scott's invasion of that country. Here again the Merchant Marine and the Army cooperated to ship supplies, men and equipment to Vera Cruz previous to Scott's famous march to Mexico City. Crude as it was, it still can be classed as an amphibious operation.

By the time of the Civil War the influences of the railroad and steamboat determined the character of the campaigns. The use of rail and steamer made it possible to sustain and supply field armies as large as 100,000 men when ten thousand had been close to the limit before. Horses, mules, and covered wagons were still a necessity, but they could be used only for short hauls from railhead or water points. General Grant once remarked that draft animals and wagons were good for a distance of only 25 miles. There was no pay-load in longer stretches because horses and mules beyond the 25 mile range could carry nothing but their own forage.

In the Spanish-American War the Army entered the water transportation field, but prior to this time did not have many sea-going vessels for passenger and freight service. It did have a number of harbor and ferry boats, however, for operation around ports of New York, San Francisco, and New Orleans. This war wasn't many days old when it was discovered that the American Merchant Marine did not have suitable ships for carrying troops, animals, and supplies to Cuba. Nearly all available vessels were lacking in "'tween deck space," making their conversion to troop transports difficult. To meet the emergency, the Army took over six vessels from a British Flag Line and 11 other ships of American and foreign registry. This was the forerunner of our present Army Transport Service, and an indication of the need of a larger Merchant Marine. We did have amphibious operations in this war to Cuba, the Philippines, and of course to Europe in World War I.

◀

Top: The United States Naval Ship "Mt. Vernon", better known in peacetime as the "Washington" leaving San Francisco Bay during the early war years loaded with troops headed for the battle front.

(U. S. Navy Photo)

Center: Some of the huge bulk in the movement of supplies to the front. This is New York Port of Embarkation during the war.

(Army Signal Corps Photo)

Bottom: The loading program as it was handled by the Transportation Corps in New York Port of Embarkation during the war.

(Army Signal Corps Photo)

It seems ironical that while a majority of the American people seek peace in a world of aggression, most of our major wars have been fought in foreign territory, necessitating the use of amphibious support. Although most of our wars have needed this cargo lift, we had neglected to emphasize the study of this important military operation until World War II.

It took man a good many years to learn the value of water transportation. The transport of men, equipment, and supplies to the right place at the right time is the first step in waging a successful war. Any nation to wage war must present a plan to put its transport knowledge and equipment to proper use. This the Army Transportation Corps did during the last war, and it was a well done job.

It was a huge task, accomplished only by the Allied plan of pooling all its shipping. All American vessels except a small number owned by the armed forces were coordinated in a pool under management of the War Shipping Administration. A similar pool under British control, called the British Ministry of War Transport, composed the shipping resources of the United States.

Just as our Merchant Marine linked American overseas forces with American production, so it aided in cementing the United Nations into one fighting unit not separated, but joined by oceans. The organization under the War Shipping Administration possessed the largest number of ships in the United Nations pool. In this the Merchant Marine was successful in two assignments—to knit the ocean-separated United Nations into a single wartime organization, and to place our armies and equipment on hostile shores and maintain them there.

Before the war it was seen that the immense shipbuilding program would absorb the complete attention of the United States. To this we had to plan a program—not only of shipbuilding, but training seamen, repairing vessels and moving supplies. This was only a part of the job.

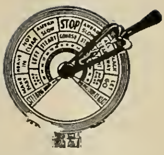
In May, 1944, the United Maritime Authority was created under which the governments involved accepted as a common responsibility the provision of shipping to meet military and other problems arising from the end of the war in Europe, and later the war in the Far East. The UMA was terminated in March, 1946.

The strategy of World War II involved many amphibious assaults, mostly from foreign ports. The highly mechanized armies of today made supplies to front line troops the war's biggest logistical problem. To note this is to realize the immense task faced at that time. Tanks, guns, planes, trucks, parts, construction materials, plus huge amounts of oil and gas and a thousand and one other things necessary in modern war had to be transported to overseas bases, discharged and stored or loaded again for movement to the front. This placed a terrific strain on shipping. The Army, during the war, had in its service as much as 48 per cent of the oceangoing shipping, other than tankers, that were under American control. Between December, 1941, and August, 1945, the

(Please turn to page 75)

Steady as you go!

KNOWLEDGE IS THE STRAIGHT COURSE TO ADVANCEMENT



A Department for Deck Officers

by "The Skipper"

Questions Welcomed. Just Address "The Skipper," Pacific Marine Review, 580 Market St., San Francisco, California

Chart Corrections Simplified

A VESSEL navigating with uncorrected charts and publications is considered to be unseaworthy. The responsibilities involved may fall to the vessel's owners or to the vessel's Deck officers, depending upon the diligence used by each. The vessel's owners are required to use due diligence in making the vessel seaworthy. This includes outfitting the vessel with up-to-date charts and publications, and the latest Notices to Mariners.

The law states that every Deck officer's duty is to acquaint himself with the information contained in Notices to Mariners. This can be interpreted to mean that the corrections therein are to be placed on the charts and publications in current use in their vessel.

When the owners have employed due diligence in making the vessel fully seaworthy, then the owners are exonerated from responsibility for loss or damage to cargo which is caused by an error in navigation or in management of the vessel, on the part of the ship's officers. Some steamship operators feel the serious aspect of this, to such an extent, that they have assigned qualified personnel of their shore staff to check the charts and publications of each of their vessels while in port. It is needless to mention the rebuke to the navigating officers, when unsatisfactory corrections are found. Probably most owners rely on their captains and navigators to requisition new charts and publications when needed, and the owner supplies these, together with the latest Notices to Mariners. This now places the full responsibility upon the Deck officers, in navigating and managing the vessel. Failure to do so, can easily result in suspension or revocation of license, particularly in the event of marine casualty in respect to use of navigational aids.

Most Deck officers to whom the job falls, approach with a certain amount of apprehension, the tedious and painstaking efforts involved in picking out the necessary corrections and applying them to charts and publications. I think that in this article we can work a method of taking out corrections which will, I hope, remove a great deal of the boring details, and speed up the operation. That method must be first of all, systematic.

Let us first enumerate the sources of information: (1) Notices to Mariners, weekly, (2) Daily Memorandum, (3) Hydropac, daily, weekly, (4) Nemedri, daily, weekly. Usually quarterly, items (1), (3), (4) are issued in the form of a Summary. Now to look at the items to which corrections must be applied: (1) Charts, (2) Sailing Directions and Coast Pilots, (3) Light Lists, (4) Radio Aids to Navigation. The required practice is to keep on file for a year, the Notices and other issues of information, primarily in the event that the vessel is assigned to a new trade route or has additional ports-of-call included in her voyage route. It is then necessary to go back through all information sources and extract the data on the new ports and their approaches.

Here is where our system starts. On the face of each Notice to Mariners and other booklets used, make a check-off diagram, for the various types of corrections and using abreviations for the port names and approaches. If you have too many ports to list this way, then the hectograph jelly-roll can be used to make up a tabulated list of ports and the check-off columns on small paper forms about the size of a Noon report form, which can then be pasted to the face of each booklet. A suggested form which you may find satisfactory for your purposes is on page 49.

This will give you a ready reference guide as to which corrections have been extracted, and for which publication. There is no need to go scanning through scores of pages, once the corrections have been taken from the booklet and checked off. Small and brief corrections may be copied into the Light Lists or other publications, and the paragraph in the Notices to Mariners should be

Port or Area	Slg. Direct Coast Pilot	Light List	Radio Aids
P. Reyes—Montara	X	X	X
S. F. Bay	X	X	
Montara — Newport	X	X	X
L. A. area	X	X	
No. Pacific Is.	X	X	X
Inubo Saki — Yoko.	X	X	X
Yoko. — Kobe	X	X	X
Nansei Shoto	X	X	X
Nanpo Shoto	X	X	
No. Luzon — Manila	X	X	
Manila — Hong Kong	X	X	X
Hong Kong—Formosa	X	X	X
Formosa — Shanghai			
Shanghai—V. Diemen St.			
V. Diemen St.—Kobe	X	X	X
S. Berdino St.—Manila	X	X	X

scored through to indicate the correction has been taken out. For the lengthier corrections, the best method is to cut the paragraph out and paste it on the appropriate page in the publication.

Light List corrections are listed with only a reference number. I have found the simplest system is to have a small hard-cover notebook in which to record the reference numbers for your ports and routes, then with this record before you it is a simple matter to pick out only the corrections which fall within the groups of numbers you have in your record. For example: Hong Kong (4602—4642). In cutting the corrections out, be careful to leave the issue number of the Notice to Mariners attached to the paragraph; otherwise, anyone looking into your Light List, etc., may easily see the change in the aid to navigation, but the effective date is not there to complete the data.

The Sailing Directions and Coast Pilots' corrections also have reference numbers, but this is primarily to facilitate indexing the corrections in the Notices' front index. At the end of each correction paragraph, there is listed the following items to which this correction has reference: Charts, by number; Publication by number and page; and Light List numbers are also shown here, if it is a correction regarding aids which are listed in that publication. The simple system in this type of correction will be to have in your record notebook, under the book name and H. O. number, the particular pages which have reference to your ports and routes. For example:

U. S. C. P. Pacific Coast '42
—Pt. Reyes to Pt Montara, pages 114 to 155.

A mention as to standard accessories for the operations would include these (1) A pair of large scissors; (2) A bottle of mucilage. This is quicker than paste when poured into a saucer and the tip of the cut-out correction only smeared about ⅛ inch and inserted in the publication on that part of the page next to the binding. The other end hangs free, but lies flat across the page. It is quite often necessary to look at data underneath where the correction has been inserted, so pasting the correction in this margin so that it can be hinged back, is probably the best way to install. (3) Last but not least, plenty of room to work, where no draft will blow all the clipped-out corrections out the porthole. The chart table will undoubtedly make the best place to work. Insert corrections in just one volume at a time, although the corrections can be taken out all at one time and spread out on the table in proper sequence for inserting them in the proper volumes.

Inside the front cover of each publication, on a blank fly-leaf, you should list the ports, areas and page numbers corrected for, in horizontal columns, then directly below each port or area, you can insert the date that the last correction has been made. For example: inside the cover of the Pacific Coast Pilot:

Pt. Reyes to Pt. Montara	Pt. S. Pedro to Newport	
8-15-49		S.G.R.
10-24-49	10-24-49	S.G.R.
1-11-50	1-11-50	W.T.D.

Notice that the officer's initials show by whom the corrections were made.

Before we make the corrections to the charts proper, let us scrutinize further, the contents of the Notice to Mariners. First, ascertain whether or not you are equipped with the edition which best suits your needs. A World Edition will usually be the most suitable one. There are Pacific, Atlantic & Gulf Coast editions also. The index in the front of the Notice is a listing of only those correction paragraphs which we discussed under the Sailing Directions and Coast Pilots. Immediately following these, you will find the corrections to Nemedri, which is of course for Northern Europe and Mediterranean waters. Next in sequence are the corrections to the H. O. Light Lists, by Volume number. And then there are the corrections to the U.S.C.G. Light Lists for the Atlantic-Gulf Coast, and for the Pacific Coast. And now we come to the Corrections to H.O. 205, that is, the Radio Aids to Navigation. Do not overlook these; highly important data is included herein. And last but not least, you will find a list of charts, by number, H.O. or U. S. C. & G. S., together with the paragraph number for the Sailing Direction or Coast Pilot. Only charts to which the corrections of the current issue refer, are listed. It is a simple task to compare these chart numbers with your chart list for your route, and pick out those charts which require corrections. The paragraph number will give you the key to the correction paragraph in the first section of the Notice, from which all the detailed information can be obtained. The last table of corrections is primarily for Navy use, as it lists the charts by Consecutive Numbers.

Information regarding mines, minefields and other dangerous areas, together with channels and markers through such areas are not usually listed in the Notices to Mariners. This vital information is to be found in the Hydropac Messages, and in Nemedri. These publications are issued with the same frequency as Notices to Mariners, and in addition, your Radio Operator can copy the up-to-date message by broadcast. Frequencies and schedules for these are printed from time to time in the Hydrographic Bulletin. Very pertinent data, for instance from the Hydropac, can be entered directly on

(Please turn to page 75)

San Francisco Port Engineers Meet in Westinghouse Plant

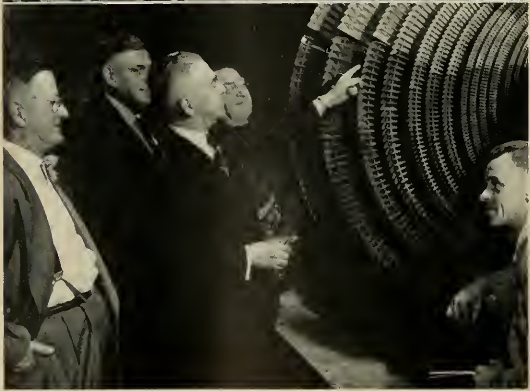
An inspection of the extensive electrical and steam turbine repair facilities at the Westinghouse Electric Corporation plant at Emeryville, Calif., climaxed the March 1 meeting of the Society of Port Engineers, San Francisco. More than 70 members and guests of the society were present. E. S. Holt, plant manager, served as official host for the meeting.

C. H. Sandal, Westinghouse steam service engineer, gave an illustrated talk on the fundamentals of vibration in rotating machinery such as generators, motors and steam turbines, and demonstrated parts of his talk with an actual direct current armature under test on a highly accurate dynamic balancing machine. William Hornberger, Westinghouse steam consulting and application engineer, showed a new color motion picture of the U. S. Navy's jet plane "Banshee," which is built by McDonnell Aircraft and powered by two Westinghouse J-34 axial flow turbojet engines.

The giant spindle for a 12,500 KVA turbo-generator undergoing repair in the shop was shown to the visitors, and the nature of repairs was explained.

A dinner at Angelo's on San Pablo Avenue, Emeryville, preceded the meeting.

Larry Rapp, of the C. C. Moore Co. at a recent meeting of Port Engineers. Looks like the boiler is O.K., eh Larry?



Pictures taken at the San Francisco Port Engineers meeting March 1 in the Westinghouse Electric Corporation's plant at Emeryville, Calif.

Top: C. H. Sandal, Westinghouse steam service engineer, explains by diagram part of his talk on the fundamentals of vibration in rotating machinery.

Bottom: E. S. Holt, Westinghouse plant manager at Emeryville, points to repair work being done in the shop on the big spindle of a 12,500-kva turbo-generator. Left to right: Tom Klitgaard, MSTS; Robert Huntley, Ohm Ship Service Co.; Holt; J. Suboff, MSTS; and L. R. Allen, Pacific Tankers Corp.

Port Engineers - -

Lake Shore Engineering To Demonstrate Magic Winch

About a year ago Marshall Garlinger, Program Chairman of The Society of Port Engineers of San Francisco, suggested, upon his being advised of the Lake Shore Engineering Company's new development known as the Magie Winch, that the design of the unit featured unusual characteristics, and would be furthered by presentation in the form of a working model to express these features, and allow those interested to actually see and experience the performance.

As a result of Garlinger's suggestion, Lake Shore Engineering Company was impressed with the proposal, and have developed a model which will be used to demonstrate its features at the May 3 meeting. M. J. Gigy of M. J. Gigy & Associates, the Pacific Coast Representatives for Lake Shore Engineering Company, will lecture on the Magie Winch and other recent material handling developments by Lake Shore. The lecture will include moving pictures of several of the new developments.

McAndrew's Prayer

Thenk Thee Oh Lorrd for up and doon engines
  Wi' crank shaft and pistons and rods in between
An' rockin' pump leevers an' pressure receivers
  An' Stevenson's valve gear sae easy on steam.

An' thenk ye again for auld Scotch bilers
  An' the coal we aye needed when faur, faur frae hame
An' the wee bit commession, Phoosh! a mistake in adeetion.
  For that Ye'll forgie us, we're hardly tae blame.

I'll gie Ye a tip Lorrd but keep it a secret
  The Captain taks pickins on water and air
Jist smite him at leisure, if that be your pleesure
  He ought tae be roastit for stealin' my share.

We humbly gie thenks for a gran' Scottish potion
  An' for them that can tak' it withoot gettin' fu'
Let ithers revile it but don't let us spile it
  It's the cream o' the heather the real mountain dew.
Unanimous.

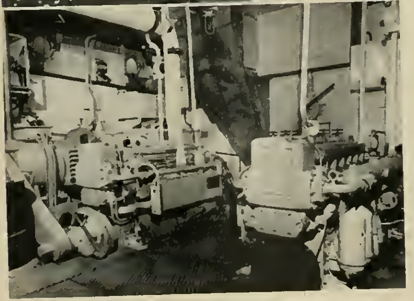
The Editor will welcome your guess as to the author of this poem.

(Port Engineers news continued on page 76)

The "Crossroaders," barbershop quartet from Orinda, Calif., entertaining San Francisco Port Engineers at Angelo's Restaurant, Emeryville, in March.

Yacht "Lycon" in U. S. Showing

THE 85-foot Netherlands-built steel twin-screw GM Diesel powered yacht *Lycon* arrived in this country March 2, aboard the Holland-America Line freighter *Axeldijk* for purposes of demonstration and was unloaded from the deck of the freighter by floating crane at the Hoboken pier.



Top: The yacht "Lycon" on the deck of the Holland-America Line freighter "Axeldijk" as she arrived at Pier 5 in Hoboken on March 2.

Bottom: The engine room of the "Lycon," showing the two General Motors Series 71 Diesel engines of 200 horsepower each at 2,000 rpm with hydraulically actuated reverse gears with a 3:1 reduction.

The *Lycon* was completed last December by Amsterdam Shipyard, Ltd. During her stay in U. S. waters, the *Lycon* remains under Netherlands registry and flies the Netherlands flag, as well as the pennant of the Royal Netherlands Yacht Club of Amsterdam. A skipper and an engineer from the builders are with her, and the builders themselves, Messrs. Gerard de Vries Lentsch Senior and Junior, are demonstrating the yacht.

The *Lycon* is powered by two General Motors Series 71 Diesel engines of 200 horsepower each at 2,000 rpm with hydraulically actuated reverse gears with a 3:1 reduction. Her speed is 12 knots per hour. She has a separate 5KW Diesel generator for electricity supply and carries 8 tons of fuel oil and 3.3 tons of water in built-in double bottom tanks.

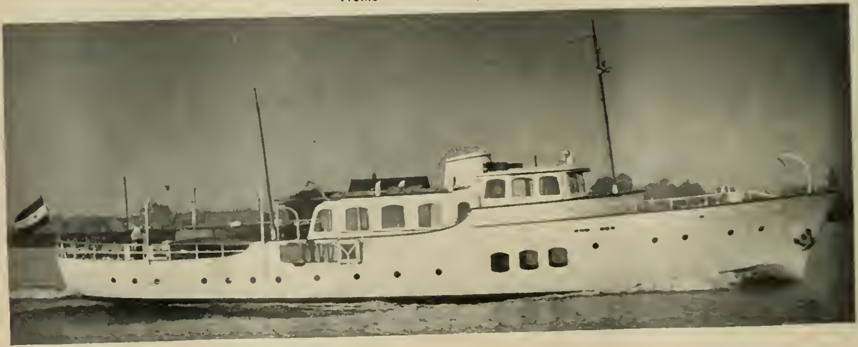
Her overall length is 85 feet, waterline length 78′ 3″, beam 16′ 0″, depth 10′ 3″, and draft 7′ 0″. The hull is built of Siemens Martin steel, smooth finish above water line. She has four watertight bulkheads, teakwood decks, skylights, companion ways, bulwark paneling, railcap gratings, accommodation ladder, etc., and heavy bronze windows. Central heating, as well as hot and cold water supply and refrigeration, are additional facilities.

On deck she carries a 16-foot mahogany power launch and a 12-foot mahogany dinghy. Davits have hand winches; the anchor operates on an electric winch.

The accommodations include: (on deck) wheelhouse, chartroom, passageway, lobby, and deck saloon. Below deck: dining room, three double staterooms, galley, captain's cabin, crew's quarters, bathrooms, toilets, showers, etc.

Its builders, Amsterdam Shipyards, Ltd., have built more than 2,000 vessels, including the 100-foot royal yacht, *Piet Hein,* a wedding gift of the Netherlands people to H.R.H. Queen Juliana of the Netherlands and Prince Bernhard.

Profile view of the "Lycon."



Pacific
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A Banker Discusses—
Devaluation and America's Foreign Trade

By W. T. DUNN
Asst. Cashier, International Banking Department,
Bank of America N. T. & S. A.

IN undertaking this assignment I am under no illusion that I shall bring any great new truths to such a group. The best that I can hope to do is to refresh your own memories on some material with which you have long since become familiar, and to re-state and underline some basic facts which periodically tend to become lost under the pressures of national, sectional, or group self-interest.

Our subject is in the field of economics—that so-called "dismal science" which treats of mankind in the process of earning a living. The more I read of economic history and watch its workings in the present day world, the more it seems to me that it should be called the "brutal science," because its workings and its judgments are as inexorable and as brutal as some great sentient juggernaut rolling slowly across the earth. It may be impeded by obstacles or slowed by tinkerings but still it moves on, knowing and unstoppable.

Economic laws are as old as mankind and for as far back as historic record exists man has been trying to change or amend economic laws to meet existing problems, without success. To this day we do not appear to have realized that a lasting solution to any economic problem is only to be found when we decide to work out the difficulty within the framework of economic law—instead of trying to change the unchangeable.

What is economic law? It is not one law but many and all of them arise logically and inevitably from the aggressive and defensive thought and action of man competing with his fellows in search of a living. The list is long and familiar to us all. Perhaps one of the best concise explanations of economics is contained in a story I read sometime ago.

W. T. Dunn

It seems that back in the olden times there was a small kingdom governed by a wise king. Hard times fell upon his people and he was greatly concerned. He called his group of advisors together and invited their counsel. All united in telling the king that the rise and fall of business and the consequent periods of prosperity and depression were due to economics. The king then said "Well then, tell me what is this thing called economics. Let us see just what it is in order that we will know how to make it work to our advantage instead of against us." One by one his advisors gave him their answers and just as today their explanations of economics were long-winded and inconclusive. The king was fast losing

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This talk was presented before the Propeller Club of San Francisco March 15, 1950.

patience with their inability to give a brief and clear definition of "economics," when finally he came to the last man at the table, the eldest and most learned of his advisors. This wise old gentleman arose and faced his king and said: "Sire! I can give you in one short sentence the sum and substance of this thing called economics. All the thinking and all the volumes that have been devoted to this subject can be boiled down to one statement, *'There ain't no such thing as free lunch'.*"

This in a nutshell is the great truth of economics—there is no such thing as free lunch. Everything is paid for one way or another. The devaluation of the British pound and of about 30 other currencies shortly following is just part of the payment for two devastating wars and a chronic condition of world trade balance which goes back to the first world war.

The last war cost the participating nations 1,117 billion dollars and in addition there was an estimated 231 billion dollars of property damage. This *must* be paid for. We are paying for it—and we shall *continue to pay* for a long time to come. Nations, like individuals, cannot waste without wanting—and war is the worst of waste. Nations cannot spend more than they earn but most nations, including our own, have been trying to do just that for a long time now.

Naturally, much more could be said about the causes leading up to devaluation but when you have to paint a large barn in a short time you use a wide brush.

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England devalued her pound because she ran out of the dollars or gold necessary to support the pound at $4.03. The 30 other nations following her example did so for very similar reasons and to keep their competitive position with England and with each other, in foreign trade.

Let's look at the English situation for a moment, because her predicament and the result she expects from devaluation are typical.

In June 1949 the total British holdings of gold and dollar exchange were down to 1,592 million. For five years previous they had at no time been over 2½ billion. In July England sent 122 million dollars to the United States in settlement of balances due, mostly trade. In August 243 million was sent and in September 101 million. On September 18 the British announced a reduction in dollar value of the pound from $4.03 to $2.80, a drop of 30.5%. Why? They had no alternative. At the rate their gold and dollar reserves were being drawn to this country they would have cleaned their coffers to to the last dollar in another 8 or 9 months, and then would have faced complete suspension of payments and vastly greater difficulties.

In taking the drastic step of devaluation, England accomplished several purposes. First, she faced an economic fact—the pound at $4.03 was over valued in relation to the dollar. Second, England relieved the pressure on her dollar reserves by reducing the number of dollars she had to make available in return for pounds. Third, she automatically reduced her imports from the United States by making them 44% more expensive to her own citizens in terms of pounds. Fourth, England made dollars buy more pounds and hence buy British goods on the bargain counter.

As noted, most of the other trading nations followed England for much the same reasons and to retain their relative competitive positions.

All of this seems to put us right up in the limelight as the involuntary major benefactor to the devaluating nations. In the light of economic justice and equity that is actually just where we belong. Economically speaking, we have been getting away with murder for more than 30 years now. Lest this sound too extreme, let me sketch in a little history briefly. The United States has had a consistently favorable balance of trade since before 1850. In our early history and up to the time of the first world war we were a debtor nation on balance, as a result of the foreign investments made in this country. As such, we were economically correct to strive for an excess of exports over imports in order to repay our debts abroad. However, the first world war changed our position drastically in relation to the rest of the world. The great needs of our allies during and after the war were supplied by our steadily expanding production capacity and we emerged from the war years a creditor nation to the extent of almost 16 billion dollars.

Instead of facing up to our position as a world creditor and allowing our debtors to pay us at least substantially in goods while easing up somewhat on our

(Please turn to page 57)

Brazil Wins Favorable Trade Balance With U. S.

$72 Million Ahead

Brazil has become the first of the world's large trading nations to reverse postwar commercial trends and come through 1949 with a favorable balance of trade with the United States.

Official preliminary figures showed that Brazil in 1949 obtained a favorable balance of 1,346,992,000 cruzeiros, or about $72,750,000, in its trade with the United States.

The balance, almost as large as Brazil's unfavorable trade balance in 1948, was considered a direct result of strict trade control laws efficiently enforced.

In this sense, it was not necessarily an indication that Brazil-U. S. trade had got back to the normal level existing before 1946. Before the war Brazil's favorable trade balances with the United States were frequently double the amount paid our for imports from this country.

The 1949 favorable balance still left Brazil with a huge over-all deficit for the period 1947-49. In the two years 1947 and 1948 Brazil piled up an unfavorable balance amounting to approximately $390,000,000.

Thus, the favorable balance achieved in 1949 of $72,750,000 still left a deficit over the three-year period of nearly $320,000,000, and of $240,000,000 if the good years of 1945 and 1946 are included.

Despite this fact, Brazil had paid up accumulated commercial arrears to a point where it was only slightly more than two months behind on main categories, which is a fairly normal time lapse.

The figures released by the Ministry of Finance, which may still be subject to minor alterations, showed Brazilian exports to the United States last year were valued at 10,117,453,000 cruzeiros.

This sum was approximately half of the value of Brazil's world-wide exports, which were placed at 20,153,084,000 cruzeiros, or about 1,500,000,000 cruzeiros less than the 1948 value.

Brazil's imports from the United States in 1949 were valued at 8,770,353,000 cruzeiros, which came to around 40 per cent of Brazil's world-wide imports, reckoned to be worth 20,648,081,000 cruzeiros.

Brazil's world trade was thus unfavorable by some 500,000,000 cruzeiros, against a favorable balance in 1948 of about 712,000,000.

The world deficit was more than accounted for by Brazil's unfavorable 1949 trade with Britain, where the deficit came to 950,000,000 cruzeiros.

The deficit with Britain, however, might be considered nominal in view of Brazil's accumulated credits in pounds sterling. Brazil, in fact, has been drawing on these accumulated pounds to pay Britain for its railways in Brazil and to retire British-held bonds.

Significance was seen in the declining percentage of Brazilian imports from the United States. Amounting to 40 per cent of all Brazilian imports in 1949, these purchases had been about 50 per cent of the total in 1948 and up to 62 per cent in 1947.

These figures further pointed up the fact that the dollar shortage had obliged Brazil to turn more and more toward soft-currency European countries as supply sources.

Brazil's imports from the United States in 1949 came to 1,489,963 metric tons, about 182,000 tons less than her exports to the U. S., and had an average value of around 6,000 a ton.

World trade by Brazil since 1945, in *Cruzeiros*, is shown in the following table:

	Exports	*Imports*	*Balance*
1945	Cr$12,197,510,000	8,747,086,000	3,450,424,000
1946	18,229,532,000	13,028,734,000	5,200,798,000
1947	21,179,413,000	22,789,291,000	—1,609,878,000
1948	21,696,874,000	20,984,880,000	711,994,000
1949	20,153,084,000	20,648,081,000	—494,997,000

Brazil's trade with the United States, since 1945, has been as follows, in round numbered *dollars*:

1945......	$330,000,000	$260,000,000	$ 70,000,000
1946......	423,000,000	416,000,000	7,000,000
1947......	450,000,000	760,000,000	—310,000,000
1948......	505,000,000	585,000,000	— 80,000,000
1949......	555,000,000	482,000,000	73,000,000
5 Years:	$2,263,000,000	$2,503,000,000	—$240,000,000

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Cornelis Winkler Returns From Round-the-World Tour

Jules Verne, imaginative French novelist, said it could be done in 80 days but according to C. Winkler, President of the Transpacific Transportation Company, just back from a round-the-world business and pleasure trip, it took him a little longer—130 days to be exact.

Winkler, accompanied by his wife, departed last November aboard the SS *Rondo,* one of the Java Pacific Line's new fast cargo liners. Upon arrival in South Africa he visited the Company's agencies at Capetown, Port Elizabeth, East London and Durban, then journeyed to Johannesburg, Pretoria, and Kruger National Park, a wild game sanctuary of 8000 square miles. "This wild game park", Winkler reflected, "is just the opposite of a zoo where you're on the outside looking in at the animals. But at the park you're in an automobile and the lions, leopards, elephants and giraffes come up to look at you. Its eerie!"

At Lourenco Marques Winkler rejoined the *Rondo* and sailed to the little volcanic island of Mauritius in the Indian Ocean. Although British, French is still the language. The island is tropical receiving annually 100 inches of rainfall. Sugar is the only crop, amounting to 400,000 tons yearly. The *Rondo* lifted a full cargo and sailed for Colombo.

While in Ceylon Winkler visited some of the rubber and tea estates. Tea is widely advertised on billboards along the highways and everywhere one sees "Have you had your cup of Ceylon tea today"? The overseas visitor stepping ashore on the jetty at Colombo can buy at special counters one pound packages packed in little wooden cases bearing the slogan:

When you're dog tired
When things get your back up
When things irritate you
When things get your goat
TEA REVIVES YOU.

From Ceylon the Winklers flew to Bombay, journeyed to Agra to see the fabulous Taj Mahal, and on to Calcutta. The cold war between India and Pakistan, Winkler stated, is still going on and not getting any better. Like other Oriental countries which have thrown off the shackles of colonization it is the same story—they haven't the schooled administrators except those trained under their former white masters, and of course there is an entirely insufficient number of them to do the job. The result is inefficiency and rampant corruption. Yet they boast of their spiritual culture which they claim a young nation like the U. S. A. lacks, and unfortunately it does not make for material well-being of the people. Also there are still anachronisms like the Holy Cows, which are permitted to obstruct traffic even in the larger cities and one cannot escape the feeling that things will be materially worse before they are better.

Joining another vessel of the Java Pacific Line, the SS *Radja,* Winkler then sailed to Penang, Port Swettenham and Singapore. The situation in the Federated Malay

One of the Java Pacific Line's C-3 cargo ships with limited passenger accommodations similar to the "Radja" referred to in the story.

States, he observed, appears to be the closest to prewar, while Singapore seems to be the cleanest and most prosperous port in the Orient.

After departure from Singapore the *Radja* called at Manila, then sailed to San Francisco, and the 130 day adventure came to an end.

It was quite an experience, Winkler reflected, both from the standpoint of business and pleasure. And there was the humorous side, too, when the *Radja* sailed from Calcutta and Agents dispatched the following cable to San Francisco, "*Radja* sailed February 9th embarked 304 monkeys and Mr. and Mrs. Winkler."

Tea Men Entertained Aboard "Radja"

San Francisco Tea Men and their wives were entertained at a cocktail party and buffet dinner given in their honor by Captain W. H. Mante and officials of the Transpacific Transportation Company aboard Java Pacific Line's SS *Radja* on March 24th.

The SS *Radja,* a modern C-3 vessel already well familiar to the Tea and Coffee trades, arrived on the Pacific Coast on March 18th with a record load of well over a million pounds of tea from Calcutta and Colombo.

Aboard the "Radja"

Left to right: E. J. Spillane, President of G. S. Haly Co. and President of Western States Tea Association; Miller Riddle, Western Sales Manager, Thos. J. Lipton, Inc.; Werner Lewald, Inbound Freight Agent, Transpacific Transportation Co.; John Siegfried, Western Manager, Irwin-Harrison-Whitney, Inc.; Paul F. Mitsch, President, Paul F. Mitsch & Co. and Secretary, Western States Tea Association; Charles S. Martin, Western Manager, H. P. Thompson, Inc.

Left to right: Werner Lewald; Capt. W. H. Mante, Master, S.S. "Radja"; Jan A. Greve, Assistant General Manager, Transpacific Transportation Co.

A Banker Discusses Devaluation

(Continued from page 54)

export pressure, we kept right on goading our productive genius and go-getting salesmanship to build higher and higher, while at the same time employing every possible stratagem to keep foreign goods out of the United States market. We are all familiar with the arguments in favor of this policy and some of them were plausible and attractive at the time.

From the standpoint of world economy, however, this "Sell lots, buy little" philosophy could only lead inevitably to the day when the well of liquid world resources outside the United States, would run dry.

It is a fact that not in one year since 1901 has our import total approached the level of our exports. Year in and year out we have gone on, blithely siphoning off the world's liquid resources in return for our goods, without giving our good customers a fair opportunity in our own markets.

How This Adverse Trade Balance Was Liquidated

Liquidation of Gold and Dollar Assets	15 billion
Remittances	almost 11 billion
Investment of American Capital	10 billion
Grants and Loans from U. S. Government	over 66 billion

Just since 1914 we have sold the rest of the world over 100 billion dollars more than we have bought. From 1931 to 1948 this unbalance was particularly high—averaging 3 billion dollars per year in our favor. Even with our substantial total of invisible imports, i.e. transportation, insurance, tourist travel, family and charitable remittances, etc., this heavy and continuing adverse position of our debtor nations is still indefensible economically. Under our position as a multi-billion dollar creditor to the world, this 3 billion dollar figure would more properly be the measure of *our adverse* trade balance. If the comment is heard, "That would certainly make some changes in our domestic economy," I can only respond "Yes, *it will,*" and remind the speaker, as I remind myself, that economics is a brutal science which pauses before no national boundaries and recognizes no favorites.

The devalued currencies of England and the other nations can actually make a contribution to closing the so-called dollar gap and to world recovery, if we will let it. To accomplish this we must leave our dollar alone and welcome imports. Unless we are willing to see our export totals dwindle sharply as soon as E.C.A. aid is ended in 1952 we must be agreeable to letting our customers sell to us in substantially greater quantities. The only other alternative is continuing to finance our own exports by E.C.A. or some other form of dollar assistance. I am sure you will agree that it is not healthy economi-

(Please turn to page 77)

Pacific WORLD TRADE

New Export Controls

The Office of International Trade announces that country group "R" is to be expanded by extending this designation to all countries except Western Hemisphere, thereby placing 600 strategically important "R" commodities under export control for all destinations except Western Hemisphere areas. 571 other commodity classifications covered by "RO" provisions will continue to require licenses for all foreign designations including Western Hemisphere. The Office of International Trade will attempt to expedite action on all applications covered by short term L/Cs expiring during a period of consideration of applications if applicant gives number, date of L/C and name of bank on which L/C drawn.

Cotton, Oranges, Big Cargoes From Long Beach

Heavy cotton shipments from the Port of Long Beach to India are continuing with States Marine Lines sailing the Norwegian freighter *Janna* out for Bombay with 20,000 bales aboard. This is part of a total movement which will approximate 300,000 bales of California, Arizona, Texas and Mexican Cotton.

Destined for Europe was the Norwegian ship *Brandanger* which sailed from the port March 23 with 21,000 cases of oranges and general cargo aboard. These two ships carry part of a substantial tonnage of general cargo that has developed between the port and European and Far East markets during the past few months and a concensus of shipping men reveals that the outlook for trade is better than in many years.

New Manager Oakland Chamber of Commerce World Trade Department

Jess France

Jess France, foreign trade expert and former American Vice-Consul at La Paz, Bolivia, has been appointed Manager of the World Trade Department of the Oakland Chamber of Commerce.

Born in Seattle and graduated from the University of Washington in foreign trade and international relations, he has been foreign trade expert for the Kansas City and San Francisco field offices of the Department of Commerce for the past several years.

France's appointment marks the launching by the Oakland Chamber of Commerce of a large scale program aimed at promoting Oakland's outstanding advantages as a world trade center and increasing the flow of international trade through its harbor and over its surface and air transportation facilities. He succeeds Lyford M. Morris, who resigned to enter private business.

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Admiralty Decisions

By HAROLD S. DOBBS of San Francisco Bar

Employer Can't Duck Duty

IN a recent case decided in the United States Court of Appeals, entitled *Nagel* vs. *Isbrandtsen Company, Inc.*, the Court was considering an appeal from the judgment in favor of the plaintiff in an action for personal injuries suffered during the course of employment. Apparently, the plaintiff slipped while making his way along the port passageway, and testimony indicated that oil and garbage like that on which the plaintiff slipped was scattered over both port and starboard passageways. The Court commented that is was up to the defendant to show that there was an alternative way to proceed aboard the ship, which it failed to do, and therefore the Court could not leave the matter to conjecture.

The sole question that remained for the Circuit Court's decision was the question of the refusals of the judge to charge the jury. The judge properly told the jury that the defendant-employer was not an insurer of the plaintiff's safety, and that its duty was only to use reasonable diligence in keeping a reasonably safe place in which he might work. The Court charged the jury by saying that the plaintiff had no more right to be careless for his own safety if he sought to hold the defendant liable than the defendant in a similar sense is responsible to the plaintiff. The turning point of the decision, however, rests upon the fact that the defendant-employer cannot excuse himself by the refusal of the deck crew to perform its duties where, as here, it appeared to be the case, because they were in reality still servants of the defendant-employer, and therefore its duty, being undelegable, was not properly discharged.

Responsibility of Master For Fights Aboard Ship

IN THE latter part of 1945, a Liberty ship was anchored in Luzon Bay, P. I., a mile or more from shore. Jensen, an A.B., together with about thirty of the crew, had been on shore leave, and about 11 o'clock p.m. were picked up by the ship's launch in charge of one of the officers. On the way to the vessel, Bennett, the ship's carpenter, and Enchura, an oiler, who were sitting opposite one another, got into an angry scuffle in which Bennett, a big man, 6 feet 2 inches, drunk and carrying a whiskey bottle, was the aggressor. Some of the men in the boat stopped the fight. Bennett tried to renew it and one of the officers told him to "wait till they got back on the ship". Someone, whether an officer or one of the crew does not appear, said "When you get aboard the ship then you can have it out", and Enchura (who was physically a match for Bennett) said, "That is all right with me".

When the launch got alongside the Jacob's ladder, the officer went up first. Enchura was next and on reaching the deck went over to No. 4 hatch where he waited for Bennett. There were several officers on the boat deck above and one at the door of a passageway on the main deck. The floodlights were on (as was usual when a boat came back at night) and the hatch cover made a suitable ring. It was generally understood that there was going to be a fight and as the men came on the deck from the launch they stood about waiting to see it.

It took about ten minutes for all the men to get to the deck. Bennett was the next to the last man up the ladder, Jensen following immediately after him. As Bennett was getting over the rail, Jensen saw him reach back, draw a knife from his hip pocket and conceal it under a raincoat which he had over his right arm. Enchura was sitting on the hatch cover about ten feet away. Bennett dropped the raincoat and advanced toward Enchura with the knife in his hand, but before he reached him, Jensen made a lunge for him in an attempt to disarm him. Bennett turned and slashed at Jensen, inflicting a deep cut across the palm of his right hand. Other members of the crew disarmed Bennett, and Jensen went immediately to the master.

The master administered first aid, and subsequently took Jensen to an Army hospital. The ship remained in Luzon for a period of approximately five weeks thereafter, during which time the Army hospital failed to properly diagnose or treat Jensen's injuries.

Jensen brought an action against the United States of America for negligence of the owner, officers and crew on the ground that by imputed knowledge the employer had notice of the vicious tendencies of the aggressor in this case. The case went to trial, and the court concluded that the master had acted properly, and although it was apparent that the Army doctors were somewhat negligent, their acts of omission could not be charged to the vessel.

The question is whether or not the United States is liable for the original injury. Among the obligations, the breach of which make an employer liable for "negligence" under the Jones Act, is that of seeing to the safety of the crew. This means, among other things, doing what is necessary to protect the seaman from physical violence from another member of the crew. In this case, the officer in charge of the launch and in command of the men in it unquestionably knew that there was going to be a fight between two of the men when they got back to the ship. Not only did he do nothing to prevent it, but his statement to "wait till they got back on the ship" taken in connection with the fact that it was also said by someone "When you get aboard the ship then you can have it out", looks almost as though he were promoting it. The Court said:

> "I do not say that failure on the part of a ship's officer to prevent two members of the crew from settling a dispute by fighting it out would always

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Pacific Marine Review

News Flashes

TRANSPORTS "POPE" AND "WEIGEL"

The former Army transports GENERAL JOHN POPE and GENERAL W. M. WEIGEL (P-2s), now in layup fleet in San Francisco Bay, are wanted for purchase by Arnold Bernstein of New York. Bids for their conversion to passenger liners for service on the Atlantic have been called for from shipyards on three coasts and are returnable May 10. The deal with Bernstein has not been completed and may be complicated by subsidy rulings. West Coast yards will have an advantage of about $200,000 which would be the cost of moving the two ships to an Eastern yard

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FOUR TRANSPORTS DUE FOR REPAIR WORK

The MSTS transports GAFFEY, PATRICK, SULTAN and DARBY will be subject to repair bids this month.

* * * * *

U. S. LENDS $565,000 TO JAP SHIPPING FIRMS

The Japanese Finance Ministry announced last week authorization of loans of about $565,000 from the United States aid counterpart fund to two Japanese shipping firms. The firms, the Daido Steamship Co. and the Yamashita Steamship Co. will use the money to build a freighter each.

* * * * *

RISING COSTS MENACE BRITISH SHIPBUILDERS

The Liverpool Steamship Owners Association advises that costs are 2½ times prewar and British industry may not be able to meet world competition with new ships. Taxation is a big item in shipbuilding costs. Holland, Sweden and France are running ahead of Britain.

* * * * *

LONG BEACH CONTRIBUTING TO TERMINAL ISLAND WORK

The Long Beach City Council is contributing $2,500,000 to finance remedial work on the subsiding Terminal Island and for other "fill" work around Long Beach Harbor.

* * * * *

PACIFIC COAST DIRECT LINE GOING TO WEYERHAEUSER

The Weyerhaeuser Steamship Company is acquiring the Pacific Coast Direct Line's charter operation, under which the latter operated the former's vessels on westbound intercoastal voyages. Although the executive management is in the hands of W. H. Peabody in Newark, New Jersey, the general manager is Donald Watson in San Francisco.

* * * * *

$100,000 YACHT

This is said to be the cost of an 85 ft. cruiser for Henry Doelger of San Francisco for which Stephens Bros. of Stockton, Calif., have the order.

* * * * *

BETHLEHEM BUYS "ELBA"

The 47-year old 420 ft. ELBA has been purchased by Bethlehem Steel Company and will be converted to a self unloader for scrap iron by the American Shipbuilding Company.

* * * * *

AQUITANIA TO BE SCRAPPED

The Cunard liner AQUITANIA has been bought for scrap by the British Iron & Steel Corp., Ltd.

CHAMBERLIN ADDING TO FLEET

W. R. Chamberlin & Company is negotiating for the purchase of the motorship LAUGHLAN McKAY for its coastwise lumber fleet. The McKAY is a 10½ knot vessel with a capacity of nearly 2,000,000 board feet of lumber. The vessel is in reserve on the East Coast.

* * * * *

"SEA SERPENT" AND "SURPRISE" OVERHAULS

Pacific Far East Line's C-2 SEA SERPENT will be in for general overhaul at San Francisco in June. The main generator in the C-2 SURPRISE is to be replaced.

* * * * *

"LURLINE" TO GET Y-JET STEAM ATOMIZER

During the annual inspection period for the liner LURLINE, the atomizers of the six boilers in the forward fire room will be changed from straight mchanical pressure atomizing to Y-Jet steam atomizing.

* * * * *

MANY MILLIONS IN SMALL VESSEL CONSTRUCTION

Shipyard activity is too often thought of in relation to large vessels only, but the current bulletin of the American Bureau of Shipping lists 99 miscellaneous vessels in American yards. The five tugs in the Todd Los Angeles yard increase this number to 104.

Included are the following:

12 235-ft. tank barges at Dravo's Pittsburgh.
3 Double End Unaflow ferry boats at Bethlehem, Staten Island.
3 178-ft. oil barges for Standard Oil, New York.
2 242-ft. oil barges for Standard Oil, New York.
1 142-ft. diesel towboat at Calumet Shipyard, Chicago.
10 195-ft. hopper barges at Dravo's.
7 41-ft. diesel tugs at Equitable Equipment Company, Madisonville, La.
11 hopper barges at Jeffersonville B. & M. Company, Jeffersonville, Indiana.
12 123-ft. cargo barges for Inland Waterways Corp., St. Louis.
2 171-ft. double end diesel electric ferry boats at Todd's Galveston yard.
4 large trawlers at U. S. Shipbuilding Corp., Yonkers, New York.

and 30-odd lighters, tugs, towboats, barges, ferry boats, fireboats and trawlers scattered around the country.

Forty-three of the above are self-propelled and, apart from the three Unaflow, all are diesel or diesel electric.

* * * * *

TRANSPORT "MEIGS" CONVERSION

The transport GENERAL M. C. MEIGS (P-2), now in layup in San Francisco Bay, may be converted to passenger liner for American President Lines. Plans are prepared and await approval of the conversion by the Maritime Commission. Formerly discussed as a Safety-at-Sea conversion, the plans now call for complete passenger facilities.

* * * * *

PROPELLER SHAFT LINERS

The exposed propeller shafts on the P-2 PRESIDENT WILSON are being covered with rubber sleeves in an effort to prevent cavitation as described in a December 1949 Pacific Marine Review story relating to the PRESIDENT CLEVELAND. It is expected that eventually all P-2s will require this covering as already one P-2 shaft has been condemned.

* * * * *

PASSENGER ACCOMMODATIONS ON FREIGHTERS

There is increasing interest in passenger accommodations on freighters in excess of the present Coast Guard 12 limitation. This will of course change the classification of the vessels and some basic construction requirements.

* * * * *

"PATHFINDER" RADAR FOR LURLINE

Mackay Radio and Telegraph Company has completed the sale of a Raytheon Mariners "Pathfinder" radar for the liner LURLINE, installation to be completed in July.

* * * * *

ATOMIC SUBMARINES

The Electric Boat Company has started its series of lectures on atomic energy in preparation for future developments in nuclear ship propulsion. The Atomic Energy Commission recently announced a nuclear ship propulsion educational program.

Running Lights

West Winds in Larger Quarters

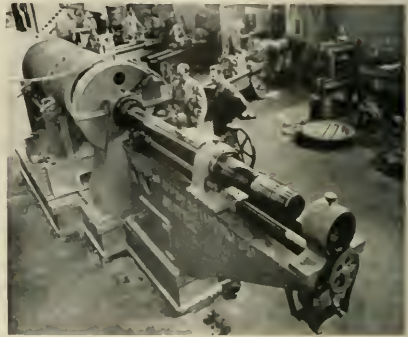
In order to have more room to conduct their expanding marine repair business, West Winds, Inc., of San Francisco, have acquired a substantial part of the old General Engineering and Dry Dock facilities at 1025 and 1035 Battery Street. The new location is more accessible to the waterfront and therefore more convenient for the firm and its customers.

Now operating from the new address, the corporation has set up their machine shop in the modern building that formerly housed the Geddco machine shop. The complete range of shop tools includes equipment for handling work using the metric system, and a newly acquired boring machine. This huge tool not only bores cylinder liners of any size, but is being adapted to turn and face them on the same machine. West Winds is currently under contract to turn out a total of 18 such liner jobs.

The San Francisco marine and industrial repair and maintenance firm wil have approximately 11,000 square feet in its new location compared with about 3000 square feet at its old address, 521 Brannan street.

Last November, the firm added a steam engineering department to its diesel, machinery and ship repair departments in anticipation of the current move.

West Winds is equipped to undertake complete ship repairs, including servicing of motors and rigging, that do not necessitate drydocking.



Cylinders up to seven feet in diameter can be bored on this king-sized boring machine newly installed in shops of West Winds, Inc. The casting on machine will soon be a cylinder liner.

Until lately, the firm has specialized in servicing foreign ships. A large file has been built up on drawings and specifications of foreign vessels and the management

New quarters of West Winds, Inc. at 1025 and 1035 Battery St., San Francisco

personnel has largely been made up of diesel and machinery specialists trained in Sweden.

Among the shipping lines for whom the firm does the major portion of repairs and maintenance are the Salen-Skaugen, Westfal-Larsen, Ditley-Simonsen and A. F. Klaveness.

Within the past few months, West Winds has been developing an equally competent staff to handle domestic lines, according to Eric C. Johnson, general manager. Creation of the steam engineering department was a move directed toward the development of these domestic facilities.

The Oakland branch will be maintained in operation.

West Winds began marine work in 1947 at their old Brannan Street location, under the guidance of Johnson and Joseph C. Brewster. President Eric and Chief Engineer Joe have since been joined by Bob Carraway, Shop Superintendent, Carl Johnson, Consulting Engineer, and more recently, J. L. Davies, formerly marine superintendent with General Engineering. Other additions to the staff include Tom Conneley and Bill Ingram, estimators, Bill Kessler, Purchasing Agent, and Freddie Ferredi, Boiler Superintendent.

Worthington Starts Work On Super-Liner Pumps

I. W. Jackman, Manager of the Marine Division, Worthington Pump and Machinery Corporation, has announced that definitive plans for the pumping equipment for the new 118,500 SHP superliner being built by Newport News Shipbuilding and Drydock Company for the United States Lines have finally been agreed upon and work actually started. The apparatus to be manufactured by Worthington is the result of a long and intensive study and the examination of various alternative designs.

Jackman confirmed that this important order for apparatus from Worthington now involves six turbine-driven, 8″ x 4″ multistage horizontal centrifugal main feed pumps, designed to raise the feedwater pressure 800 lbs. per square inch at a temperature of 310° F. and four 4″ x 3″ port feed pumps, capable of raising the pressure 700 lbs. per square inch gage. These pumps will be built of alloy steels in accordance with the practice developed in heavy dury stationary power plants.

In addition to the main feed pumps, Worthington will now build two deaerating feedwater heaters, each of a capacity to handle 450,000 lbs. per hour, for preheating and reducing the oxygen content of the water before it enters the boilers.

Auxiliary pumping equipment, also to be supplied by Worthington, will consist of two Diesel engine driven centrifugal fire pumps to handle 1000 gallons per minute of seawater against 150 lbs. discharge pressure; a motor-driven six-inch Vertical Centrifugal Submersible Bilge Pump (self priming) to handle 1200 gallons per minute of seawater against a 35-lb. discharge pressure; four 9″ x 10″ x 12″ Vertical Simplex Fuel Stripping and Bilge pumps, to each handle 180 gallons per minute against a 60-lb. discharge pressure.

The new liner is expected to be completed during the summer of 1952.

Bird Archer Company Well Represented in this Picture

Bernard R. White, Chief Service Engineer, Bird Archer Company of California (left), and Vernon S. Showell, General Manager, photographed in San Francisco. Vernon has served the shipping industry for 42 years and still going strong. When our reporter took this shot, Vernon told him of the transfer of Edward Benedict, formerly of Bird-Archer, Los Angeles Harbor office, to the firm's San Francisco staff.

March Meeting of S. F. Propeller Club

Left to right: Frank Dwinnell, Pacific Far East Line; Robert Mayer, Pacific Maritime Association; William Sanford, who spoke in behalf of the Red Cross drive; W. T. Dunn (speaker) of Bank of America, whose address appears in the World Trade section of this issue; K. C. Tripp (president), Moore McCormack Lines; J. H. Jensen, Matson Terminals; A. J. Pessel (secretary), Matson Navigation Company.

Northern California Section, N. A. M. E., Elect Officers

At the March meeting of the Northern California Section, The Society of Naval Architects and Marine Engineers, the following new officers were elected: Chairman, Sewell A. Knapp, Moore Dry Dock Co.; Vice Chairman, George L. Crow, General Electric Co.; Secretary-Treasurer, Emmet Jones, Bethlehem Shipbuilding; Executive Committee for term expiring in 1953, C. M. Loring, Mare Island Naval Shipyard.

Annual Bilge Club Banquet

The pictures below were taken at the 22nd Annual Bilge Club Banquet held at the Biltmore Hotel, Los Angeles, on February 25.

1. Bilge Club Past Presidents. Left to right: Dan Dobler, Walter Richards, Bert Pegg, Bill Courtiour, Art Pegg, Jack Malseed, Buck Buckholtz, Tom Forster.

2. There's that Seattle man, Joe Hare, Capt. Peters of Standard Oil Co., and Duke Decker. Tommy Atkinson with the cigar.

3. Mr. Martin and Co. being served by one of the Biltmore's sloppiest waiters—Joe Costello. Joe's hobby is running a store somewhere in Wilmington.

4. These gents are watching the "Chinese Frank Sinatra."

5. The show still hadn't warmed up when this shot was taken.

6. Looks like it's getting better.

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Alameda Foundry Propeller Makers

Aaron B. Carmichael, president, and William J. Allen, general manager, announce that they are now operating under name of newly formed Alameda Foundry, specializing in manganese bronze propellers up to 80 inch size. Their plant is located at 2516 Blanding street, Alameda.

Aaron Carmichael was formerly engaged in foundry practice in Puget Sound area. William Allen has had 35 years experience in the San Francisco Bay region foundry field. In fact his entire career has been that of specializing in brass and bronze castings for both propellers and ship and boat fittings. The new firm's slogan is: "Wheels from outboard-size to 80-inch." Carmichael was formerly associated with the Pitchometer Propeller Company.

►

Aaron B. Carmichael and William J. Allen, heads of the Alameda Foundry, drying molds for "Pitchometer" propeller wheel.

New S. F. Office for Home Insurance

Final plans for the erection of a new San Francisco office building have been announced by The Home Insurance Company of New York, world's largest property insurance underwriters. The Home recently acquired a three frontage property, once owned by the Spreckels' interests, situated on the northeast corner of Kearny and California Streets. The lot, extending along California to Spring Street, has a depth of approximately 128 feet. The Home Indemnity Company which is the casualty and surety affiliate of The Home, will share the new quarters on California Street.

The new structure will represent an investment on the part of the Company in excess of $2,000,000. Meyer & Evers, Kohl Building, are the architects with T. H. Engelhardt of New York, consultant; and general contractors are Cahill Brothers, 206 Sansome Street.

The company intends to build a monumental colonial structure five stories in height surmounted by a bell tower having an apex 135 feet above street level. The outward appearance of the building undoubtedly will be unique on the city's skyline as the tower will be a faithful replica of the famous and beautifully proportioned tower of Independence Hall in Philadelphia. The only exception to exact repro-

(Please turn to page 66)

The first office of Home Insurance Co. following the 1906 fire in San Francisco. Harry Roff, the man in the derby hat, was the Company's first West Coast manager and he was still active at the time this picture was taken.

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Home Insurance

(Continued from page 65)

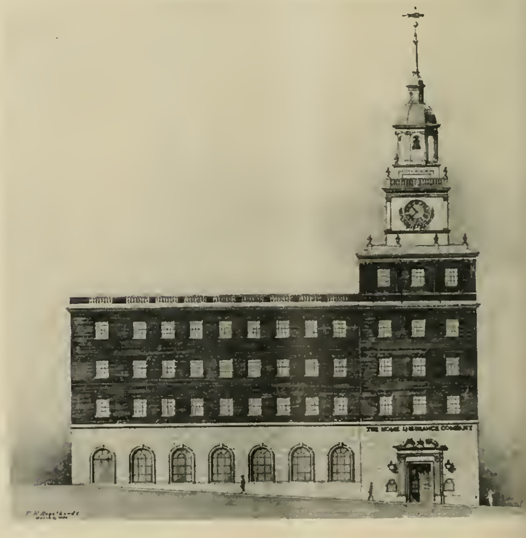
duction of the original will be in the materials used. As the old Independence Hall tower was partly constructed of wood the substitution of stone and masonry for these parts will be necessary in order to conform with present day ideas of safety and fire prevention. The Home's tower, as in the original, will be faced with a clock, and will contain a bell to strike the hour.

The interior plan will be strictly functional in order to provide brokers and agents with more efficient and convenient facilities and to give the employees of the organization the utmost in comfort and working conditions. The building will be air-conditionel throughout and the lighting will be of the most modern concealed and recessed fluorescent type. The general construction of the building is to be of reinforced concrete with stone and brick exterior trim. Aluminum window frames are to be used throughout. This will be the first office building in the city to be constructed with the new fire tower form of emergency exit in which balconies or vestibules containing outdoor vents and double self-closing doors will seal off and protect people from exposure either to smoke or flame in the escape area.

Located one-half block from the hub of the financial district, the new structure should be a pleasing addition to California Street which in history has been such an important scene in the financial development of San Francisco since 1849. The Home Insurance Company, a pioneer in bringing property insurance protection to the Pacific Coast, has had an intimate part in the economic progress of the city and surrounding territory since 1868. Some may yet recall the leading and exemplary record of this Company in meeting promptly and fully all obligations towards its policyholders following the fire in 1906 in which the Company's own office building and many of its records were consumed.

It may be of interest to note also that The Home's first west coast officer was Harry Roff, who served the interests of the community and the company for several decades. Roff, one of San Francisco's early well known characters, was in his youth the first Pony Express rider going East from Sacramento in 1860.

Architect's drawing of new office building of The Home Insurance Company to be erected on California Street, San Francisco. The tower end of the building is at Spring Street, the other end at Kearny Street.



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Federated Announces Sales Changes

Federated Metals Division, American Smelting and Refining Company, has announced the appointment of Leon A. Blum as Sales Manager of its San Francisco plant. He succeeds Forest A. Wahlheim, retired. At the same time, Donald H. Beilstein was made Assistant Plant Superintendent. The announcement was made in San Francisco by Frederick Walker, General Manager of the company's Pacific Coast Department.

Blum has been with the company for about 30 years, serving as salesman, Manager of Federated's Seattle branch, and from 1944 as Assistant Sales Manager at San Francisco.

Wahlheim started his 43 years of service with the company in the Sales Department of the Selby, California, plant. In 1933 he was appointed Sales Manager at San Francisco and he served in this position till his retirement.

A Stanford University graduate, Beilstein joined Federated as a metallurgist in 1948.

Mosher Promoted by Columbian Rope Co.

Charles H. Mosher, general sales manager of Columbian Rope Company, Auburn, N. Y., has been elected to the office of vice president of sales to succeed Stewart G. Russell, who has retired. Russell will continue to serve as a director of the company and Mosher will continue his duties as general sales manager.

Russell is a veteran of 40 years of service with Columbian Rope, occupying the positions of advertising manager, assistant sales manager, and general sales manager, until his election in 1941 as vice president in charge of sales. He has been a director since 1937.

Mosher joined Columbian in 1918 and became a member of the sales department in 1920. He traveled out of the Chicago branch from 1922 to 1927 and then returned to the sales department at Auburn. He was appointed an assistant sales manager in 1941 and general sales manager in 1944.

Rasey Appointed Sales Manager At Enterprise

Appointment of Gerald C. Rasey as sales manager of the engine division, Enterprise Engine & Foundry Company, has been announced by James S. Watson, Enterprise general sales manager.

A native of Beloit, Wisconsin, Rasey started as an apprentice engineer in 1918 while attending college, and in the intervening years has been continuously identified with the diesel engine field in both engineering and sales.

During World War II, Rasey was one of the "iron men of Hendy", when he served with the Joshua Hendy Iron Works at Sunnyvale, Calif., as sales manager of the diesel department. The famed Hendy diesels are now the equally well-known Enterprise "H" series, widely used in both stationary and marine installations.

Rasey is located in the San Francisco headquarters of Enterprise Engine & Foundry Company.

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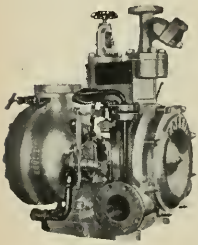

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Safety

(Continued from page 42)

mittees, one each in Los Angeles-Long Beach Harbor Area, San Francisco Bay, Portland, and Seattle-Tacoma, are composed of top management representatives of the steamship, stevedore and terminal companies in the area. All companies are not represented on the committee in any given year, but membership is rotated so that all companies do serve on it over a period of years.

3. Job Level Committees, which are joint employer-employee undertakings, to educate the longshoremen. These committees are a new departure and they are proving satisfactory. The Bureau had long felt the need of some means of reaching the longshoremen and of making them feel they had a definite part in the program. Experience with the joint hiring hall had made the employers extremely wary of any other joint enterprise. They felt, and properly so I think, that it is management's responsibility to maintain, direct and administer an accident prevention program; that the cooperation of the union as a body and its members as individuals are esential to the success of the program but that control of it belongs solely to management. The deplorable condition of our labor relations from 1934 to 1948 just seemed to make it impossible for even any sensible discussion with the union of the mutual problem of accident prevention. However, a sensible view was finally taken by both sides and the following was included in the three-year contract agreed to in 1948:

"Section 13. Safety.

"(a) Recognizing that prevention of accidents is mutually beneficial, the responsibility of the parties in respect thereto shall be as follows:

"The Union and the Employers will abide by the rules set forth in the existing Pacific Coast Marine Safety Code which shall be applicable in all ports covered by the Agreement.

"The Employers will provide safe gear and safe working conditions and comply with all safety rules.

"The Employers will maintain, direct and administer an adequate accident prevention program.

"The Union will cooperate in this program and develop and maintain procedures which will influence its members to cooperate in every way that will help prevent industrial accidents and minimize injuries when accidents occur.

"The employees individually will comply with all safety rules, and cooperate with management in the carrying out of the accident prevention program.

"(b) To make effective the above statements and promote on-the-job accident prevention, employer-employee committees will be established in each port. These committees will consist of equal numbers of employer and employee representatives at the job level. Each category of employees such as deck men, hold men, dock men and lift and jitney drivers should be represented. Employers' representatives should be from the supervisory level. The purpose of the committees will be to obtain the interest of the men in accident prevention by making them realize that they have a part in the program, to direct their attention to the real causes of accidents and provide a means for making practical use of the intimate knowledge of working conditions and practices of the men on the job. It is further intended that this program will produce mutually practical and effective

(Please turn to page 72)

Radar and Loran Training at Alameda

INSTRUCTION in the navigational subjects of radar and loran is being offered by the United States Maritime Service Training Station, Alameda, California, where the previous installations of Radiomarine and Westinghouse instruments has recently been augmented by the new General Electric Bifocal Radar set, on which a small scope shows a permanent long range outlook while a large, adjustable view can show the near-at-hand condition. These radars present a sharply defined picture of the San Francisco Bay Area, high lighting islands, ships, small craft, buoys, bridges and mountains within range.

The Station is easily reached by Bay Area transportation, and excellent teaching facilities exist. Carefully planned courses and experienced instructors combine to insure the soundness of instruction provided at the school. Licensed deck officers of the merchant marine are invited to avail themselves of the free training courses. A certificate indicating successful completion is issued to all who satisfactorily complete each course of this special training.

Twenty-one loran sets are now in operation and available for students' use.

Content of Courses

Radar and loran classes are presented separately and alternately. The radar course comprises five days. The loran curriculum is presented during an eight day period. These courses are designed to cover thoroughly the theory and principles of the two navigational systems and their practical application to present-day shipping.

The radar course includes a detailed exposition of the theory of radio detection, interpretation of scope patterns, function of each part of the radar, capabilities and limitations of radar, operation of equipment, rain squall echoes, kinds of reflecting surfaces, radar reflectors, bearing and range discrimination, sea return, false echoes, radar beacons, harbor entrance supervision, use of the echo box, radar and the rules of the road and the avoidance of collisions through the use of radar.

The course in loran comprises a study of the pulsed long range navigational method, the principle of the loran line of position, time-difference measurement, the operation of all models of marine loran equipment, use of the loran tables (H.O. 221) and charts, ground wave and sky wave techniques, accuracy and range considerations and the adjustment of loran equipment.

Although students do not receive cash allowances from the Maritime Service while they are enrolled in the Radar and Loran School, meals are furnished them and quarters are available for their use. Laboratory equipment and classroom text material are furnished without charge,

(Please turn to page 73)

The radar class at work at the Training Station. There are three radars in this picture, with Radiomarine in the foreground, Westinghouse in the center, and General Electric at the rear. Simulating the bridge of a ship, the windows look out over San Francisco Bay

Inspecting the G. E. Bifocal Radar at the Maritime Service Training Station. Left to right: Albert Gatov, President, Pacific American Steamship Association; James S. Hines, Publisher, Pacific Marine Review; M. J. Ryan, Naval Architect; E. L. McCurtain, Arne Storen Co.; Louis Ets-Hokin, Ets-Hokin & Galvan; T. Douglas MacMullen, Editor, Pacific Marine Review; and Charles T. Haist, General Electric.

Metten Resigns From New York Ship —Bossert Succeeds Him

John F. Metten

John F. Metten, board chairman of New York Shipbuilding Corporation since 1943 and chief executive officer for the past 15 years, has resigned both positions.

T. H. Bossert, who succeeded Roy Campbell upon his resignation as president in January, 1947, and was vice president in charge of engineering during World War II, was named chief executive officer of the company.

Mr. Metten, 76, began his shipbuilding career in 1893 at the Newport News Shipbuilding & Dry Dock Company as machinist and two years later was transferred to the engineering department as draftsman. In 1900 he went to Cramp's Shipyard in Philadelphia as a draftsman, being appointed chief draftsman after four years. In 1909 he became chief engineer, and subsequently vice president in charge of engineering until 1927.

He was president of the Marine Engineering Corporation in 1927, which was organized jointly by the Bethlehem Shipbuilding Corporation, the New York Shipbuilding Corporation and the Newport News Shipbuilding & Dry Dock Company, for standardizing the design for eight large cruisers constructed by these yards and two naval yards. When the work was completed at the Marine Engineering Corporation in 1930 he was consulting engineer for the Matson Navigation Company, the New York Shipbuilding Corporation and the Baldwin Locomotive Works until the beginning of 1935, when he was appointed president of the New York Shipbuilding Corporation, at Camden, N. J. In 1943 he was named chairman of the board.

He was awarded the honorary degree of Doctor of Engineering by Lehigh University in 1928, the University of Delaware in 1942, and Stevens Institute of Technology in 1949. In 1940 he received the David W. Taylor Gold Medal from the Society of Naval Architects and Marine Engineers for notable achievements in the field of marine engineering. He is a member and past president of the Society of Naval Architects and Marine Engineers, a member of the American Society of Naval Engineers, the Franklin Institute and the British Institute of Naval Architects. In 1947 both Mr. Metten and Mr. Bossert received Presidential Certificates of Merit for outstanding service during World War II.

Bossert, one of the nation's outstanding naval architects and ma-

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T. H. Bossert

rine engineers, first joined New York Shipbuilding Corporation in 1908. He served as assistant naval architect and as naval architect for construction from 1930 to 1942 before becoming vice president in charge of engineering in March 1942.

Huber Advanced By Roebling's

Walter A. Huber has been appointed general manager of the Wire Rope Division of John A. Roebling's Sons Company. President Charles R. Tyson announces that the appointment is part of a plan to decentralize the company's various divisions. The objective of the new program is to specialize each product division for more production efficiency and better service to customers. The Wire Rope Division, which Huber is taking over, is one of the company's most important operations and one for which it is best known. The Roebling Company has a long history of leadership in the wire rope manufacturing field.

Huber is a national figure in the rope industry. For the past nine years, he has served as manager of preformed wire rope sales for the American Chain and Cable Co., Inc., and prior to that had served as assistant to the president and sales manager of the wire rope division of the Jones and Laughlin Steel Corp. He has been secretary of the Wire Rope Institute for the past ten years. His headquarters are at Trenton.

Walter A. Huber

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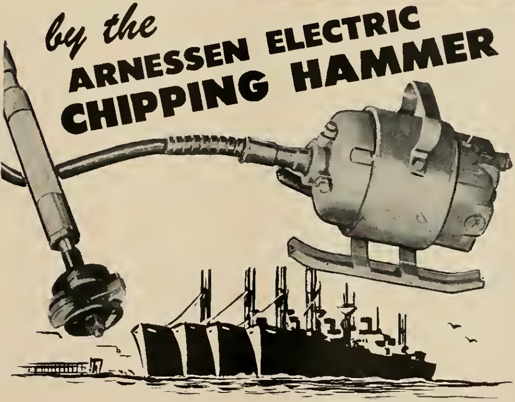

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Safety

(Continued from page 68)

recommendations regarding corrections of accident-producing circumstances and conditions."

The committees were set up, the union selecting their own representatives and the employers selecting theirs. Meetings are held once a month for a two-hour period. The employer members are paid by the companies for whom they work. The employee members are paid by the Pacific Maritime Association for their attendance.

The spirit has been excellent. Sure, there was a little trying out by both sides to see how far each could go, but now it is agreed that only accident prevention and primarily those phases of it which the men themselves can do something about are to be discussed. Accidents are reviewed and the union members are for the first time getting a complete picture of the kind of accidents that are occurring. It was agreed by both parties to the contract that these committees would have recommendatory powers only. They make their recommendations to the Area Accident Prevention Committees (Management) who take action—either acceptance or rejection. The decision of the Area Committees is transmitted to the companies who pass the necessary instructions down through their walking bosses to the men on the job. The Area Committees also pass their decisions back to the Job Level Committee, the union members of which carry it back, usually through the Stewards' Council, to the membership of the union. Thus, the longshoreman gets it from two sides, management and union, and he is inclined to pay more attention to it.

For the first time we have management and labor sitting down around a table discussing something that is mutually beneficial rather than sitting across the table and bargaining. The committees have not been in existence long enough for their work to be reflected in frequency rates but the improved understanding and willingness to work together is an impressive milestone to have reached and bodes well for the future.

The entire program is administered by the Accident Prevention Bureau which is a staff organization supported by the Pacific Maritime Association and which acts as an advisor to the individual companies both steamship and stevedore on accident prevention matters. The Bureau, among its other services, provides safety posters, publications directed to the foremen level and above, research into accident prevention problems, investigation and analysis of accidents, the inspection of operations, and furnishes liaison between the companies and the various state bureaus which are interested in accident prevention matters.

Pacific Coast Marine Safety Code

No discussion of the accident prevention situation on the Pacific Coast would be complete without reference to the Pacific Coast Marine Safety Code with which many of you are undoubtedly familiar. The code was first developed on a coastwide basis in 1929. In form it is really more nearly comparable to state safety orders or standards than to the type of safety rules a company would promulgate for its own use. This form did not happen accidentally. At the time of its development it was thought of as a possible model for an administrative code to be adopted by the U. S. Employees' Compensation Commission under the powers given that body in the Longshoremen's & Harbor Workers' Compensation Act. Originally the code was a voluntary code, recom-

(Please turn to page 74)

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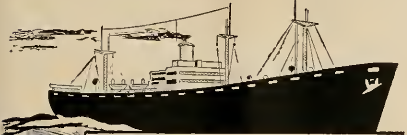

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Clarke E. Wayland, vice president of Western Asbestos Supply Co., said that stocks are now being carried in the company's San Francisco and Oakland warehouses to serve the flooring contractor trade.

MSTS Uniform

The uniform of the day planned for MSTS officers in the future will be similar to those formerly prescribed by the Army Transport Service, with a few modifications in insignia and buttons. The basic service blue and khaki will be tailored in accordance with current Naval uniform specifications. A transition period of two years will be permitted MSTS officers to make the change in insignia, etc.

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Radar and Loran Training

(Continued from page 69)

and all facilities of the Station are available during scheduled hours to men in training. These facilities include the Ship's Service Store, moving pictures, recreation rooms and swimming pool.

How to Register

Registrations for the Radar and Loran courses may be made at the United States Maritime Service Enrolling Office, Room 105, Customs House, 555 Battery St., San Francisco 4, California (Phone KLondike 6-3111). Here, complete details on class forming dates and information relative to other training courses will be furnished on request. The Enrolling Office is open Monday through Friday from 8:45 a.m. to 5:15 p.m.

Opportunity

Loran and radar as highly accurate aids to navigation were recently accorded major international endorsement at the International Meeting on Marine Radio Aids to Navigation recently held in New York and Connecticut. Both types of equipment are being installed aboard an increasing number of vessels. An unusual opportunity is provided for education in two subjects which have already found a permanent place in merchant shipping.

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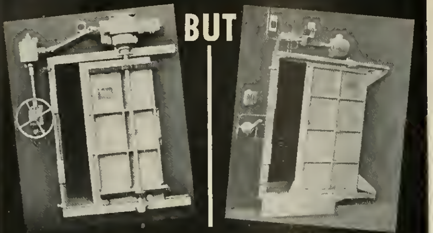

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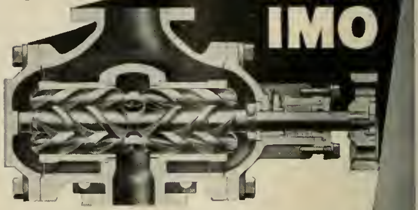

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Safety

(Continued from page 72)

mended by the Association for adoption by its individual members, and it maintained its status as a voluntary code until 1946 when as one of the conditions for settling the then current strike, it was included in the contract. In 1948 the code was revised by a joint committee of the union and employers and enlarged to include safety rules covering operations ashore as well as afloat.

I greatly doubt the desirability of having such detailed safety rules as a part of a labor contract for there is too great an opportunity for their misuse. Instead of aiding in accident prevention, rules and regulations externally imposed commonly lead to mere lip service, non-compliance, or worse yet, to selective enforcement of certain rules by one party or the other, not for the good they will do in preventing accidents, but for other benefits such as an increased amount of work which may accrue from a strict enforcement. We have had some bad experience with this legalistic interpretation of rules. "Do it because the rule says so, not because it makes for greater safety in this particular instance."

I fully appreciate the necessity for basic safety rules. They are as necessary to an accident prevention program as a trellis is to guide the growth of a living climbing rose. However, you erect the trellis not for its beauty but solely for its utilitarian purpose. Even so, accident prevention is the living vine that needs guidance and the purpose of the rules is to aid in accident prevention. Rules are not an end in themselves. Too often I find myself feeling that there is too little accident prevention and too many rules. I think a contract might well have some reference to accident prevention but it should be in general terms, not in specifics.

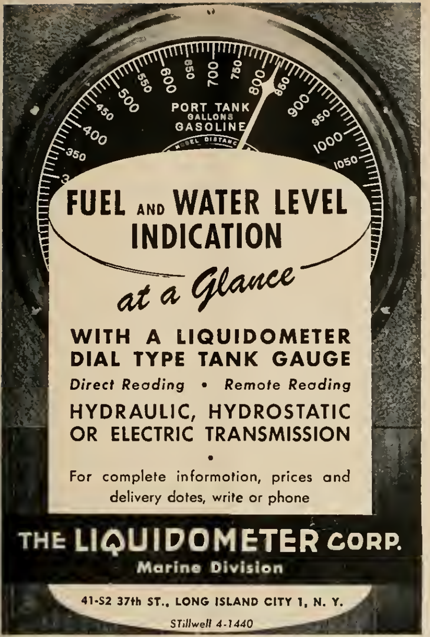
Our Pacific Coast Marine Safety Code has been of great use to us in getting ship conditions corrected but it has not been so useful in correcting practices of men. In passing, I might point out that we had just as much success in using the code in getting conditions corrected when it was a voluntary affair as we have had since it has been in the contract. Despite the fact that all the safety rules are a part of the contract and supposedly are just as binding as other provisions of the contract, nevertheless the only enforcement available comes through job action, or the threat of it, on the part of the union and so far at least it has been directed only at physical conditions and against the employers in the 20% accident-cause area, and no one takes action under it against personnel which is the 80% cause area. Safety rules have their place, but just having them written up in a book or into the contract does not mean a reduction in accidents. However, when the time comes that employers and employees alike are willing to live up to the rules in spirit as well as literally, then accident control will be more effective.

Results of Program

A group program has its weaknesses. The greatest one is that almost every company feels that they have done their part when they help support the group program financially. They are inclined to say, "You are called the Accident Prevention Bureau; get along and prevent your accidents. We are behind you in your efforts, but don't bother us." Unfortunately that attitude is not too helpful in controlling accidents.

There is much that a group program such as ours

(Please turn to page 76)



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The World Shipping Pool

(Continued from page 47)

Army moved more than 7,290,000 passengers overseas to 330 different ports and beaches.

The most critical period in ocean shipping came in the early months of the war. America, the arsenal of democracy, besides transporting and supplying her own troops, also transported supplies to her allies all over the world. This was further threatened by shipping losses through military action. During 1941 there were several months when Allied losses exceeded the combined shipping output of the United Kingdom and the United States by 500,000 deadweight tons. Up to 1942 over 12 million deadweight tons were lost. Shipbuilding in other countries was taken over by the Axis, except that in Great Britain and Canada. Thus America had to replace those losses. From the end of 1941 through 1945 in the U. S. 5,592 ships were built, amounting to 54,152,657 deadweight tons. By the end of the war in 1945 America alone had 55,000,000 deadweight tons of shipping, yet there was no surplus. We had found that ocean transportation was the key to success in total war. Britain and France controlled 27,000,000 deadweight tons in 1939, but when Germany conquered Europe much of this was lost and also our allies had to import goods above that needed for war to survive.

It is no wonder a coordinated world shipping pool was needed. It was needed to insure the United Nations that available ships were employed to the best advantage to wage a successful war.

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Chart Corrections Simplified

(Continued from page 49)

charts or other publication; however, most of the data contained in these booklets is most readily used if kept on a file board in the chartroom with the corrections used by your vessel circled with red pencil.

It is safe to assume that corrections published in Notices to Mariners is in reference to permanent changes. Temporary changes are usually stated as such. Permanent corrections should be marked on the chart in ink (india ink is best) and temporary changes in pencil. When the correction has been made to a chart, the N.M. issue number and the year should be marked in the small box provided on most charts, and the entry initialed. If no entry box is provided, draw one in, where it does not obliterate vital data.

Your catalogue of charts (that is, the one in which you have included only the ones used on your customary trade route) should have a column wherein you can mark, in pencil, the date to which each chart has been corrected. A loose-leaf type of catalogue will prove the best over a period of time, because as new charts are issued, then only the page where you wish to insert the name of such chart need be re-typed. Use double or triple spacing, so that you can have space to include additional information.

It is suggested that, in order to derive the greatest benefit from the ideas expressed in this article and more clearly understand its contents, the reader should have a copy of Notices to Mariners at hand while reviewing the data contained herein.

MICHAEL J. RYAN
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Safety

(Continued from page 74)

can do. Our program has had considerable success. For example, our frequencies for disabling injuries for the entire Pacific Coast have been reduced from 250 (estimated on the experience of three or four companies) for 1927, to 97 in 1948 (includes all companies on the Coast), while our compensable injury frequency, of whose accuracy we are more certain, has been reduced from 118 in 1935 to 65 in 1948. However, if each of our companies had an active program which fully integrated accident prevention with operations, our rates could go much lower still.

Conclusion

In conclusion, accidents occur because of:

1. Lack of knowledge of the hazards involved.
2. Neglect of known hazards.
3. Failure to require that supervisors take an active part in the control of accidents.
4. Failure to integrate accident prevention with operations.

An effective longshore accident prevention program requires cooperation on the part of shipowner and operator, terminal operator, stevedore contractor and his supervisory staff, union officials, and longshoremen. There needs to be a reasonably safe working place, proper preventive maintenance of gear, tools and equipment, and the education and training of longshoremen as to their duties. On the West Coast we have found that the group program has been effective to the extent that our disabling injury frequencies have been reduced 60% in twenty-two years. The group program is desirable for us on the Pacific Coast because of our labor setup. A group program needs to be augmented by active individual company programs if the maximum amount of accident control is to be obtained.

I cannot refrain, in closing, from telling this little story which too often seems illustrative of our feelings towards accident control.

"A gaunt farmer in a hardware store in North Carolina was complaining about the life of a tobacco grower. I sympathized that it must be hard work. 'Son, it ain't the work,' he said. 'It's knowin' what has to be done—and then rackin' your brain to figure out a way to get outa doin' it'."

Port Engineers

(Continued from page 51)

San Francisco Society Growing

Added to the roster of the San Francisco Society of Port Engineers at its April 5 meeting are the following:

Active Membership

Hugh I. Morrison, Double Seal Piston Ring Co.
Donald J. Hartsook, MSTS.
Harold D. Williams, Keystone Shipping Co.

Associate Members

John F. Kooistra, Carrier Corp.
Roy Hosford, Carrier Corp.
John R. Schneider, General Electric.
W. R. Hall, General Electric.
B. J. Huntley, Ohm Ship Service.
Paul Hersey, Moore Dry Dock Co.
Douglas Richards, Combustion Engineering Co.

Marshall T. J. Garlinger of MSTS was elected Chairman of the Board of Governors.

A Banker Discusses Devaluation

(Continued from page 57)

cally to have American taxpayers subsidize an export surplus indefinitely. When American producers of export products must plan ahead on the basis of what Congress appropriates for foreign aid our foreign trade is neither healthy nor profitable to the American economy as a whole.

It is both morally right and economically sound that American purchases of foreign goods be very substantially increased. Although there will be pinches here and there as the competitive impact of foreign goods is felt by some American industries we should make up our minds to accept as much as possible of this foreign competition in the interest of our overall long term welfare. Already several protests have been heard on foreign imports and there will be more. However, economics is a brutal science, and economic logic is in the driver's seat today.

EDITOR'S NOTE:

Oftentimes economic truths conceal inequities by which the truths themselves are undermined or destroyed. In this case, the generalization that the total of imports should be increased to exceed the total of exports should be qualified by limiting the imports to commodities that will not undermine the very industries in America which support our own, and world, economy. One such industry is shipping and shipbuilding. The world fleets are already losing the comparative status mentioned later on in this article, and their construction and operation cost ratio of about one dollar foreign to three dollars American could soon destroy our competitive position, and, with it, a vital bulwark of defense. The same is true in many other industries. But that is another story.

As St. Paul said, "*All* things are possible, but *all* things are not expedient".

The more we are willing to buy the more quickly will world trade with the United States be brought into balance and the more we can sell. What sound reason is there for fighting imports and thus inevitably cutting export business drastically when by putting dollar purchasing power into other nations by taking a fair share of their products, we can increase their ability to buy our products, and even in time to repay their debts to us. Surely this makes more sense than continuing to pay for our own exports through taxation.

Foreign trade is a two way street and we have been traveling one way too long already. Fortunately there is a definite trend in the right direction observable now. In 1946 our export excess was 4.8 billion, in 1947 it jumped to 9.6 billion, in '48 it went down to 5.5 billion and in '49 the gap was further reduced to slightly under 5.4 billion. The best available forecasts on 1950 place the export excess at from 3.5 to 4 billion.

Eventually the gap should close entirely and then go the other way.

As a world creditor we should have a trade deficit of several billion dollars a year. This will not come about quickly but over a period of years in order that our own economy may gradually adjust to our proper role in world trade; nor should this be harmful to the United States

(Please turn to page 81)

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De La Pena with States Marine Corp.

Well pleased are shipping people on the Pacific Coast over the appointment of J. A. de la Pena as Pacific Coast Manager of States Marine Corporation. Prior to this appointment he had been Assistant Pacific Coast Manager and before that, since January 1948, he was in the Atlantic-to-Far-East-service of the company. He succeeds the late D. E. Kermode.

Born in New York City, he was engaged in broad transportation activities since 1915. Five years of railroading with Baltimore & Ohio Traffic and Operating Departments established the shoreside contacts and experience which led, five years later, to the United American Lines, which company became a part of American Hawaiian Steamship Company in 1922. This connection continued for 22 years by which time de la Pena had become Assistant District Manager for the company in New York.

He became associated with States Marine in 1948.

The States Marine Corporation owns 23 vessels, including Libertys, Victorys and C-2s, and at last accounts had under time charter 33 additional vessels, all under the American flag. The company operates on various routes, including Pacific Coast-Europe, Pacific Coast-Mediterranean, and Pacific Coast-Far East, the latter route including Guam, the Philippines, China, Japan and Okinawa. Offices are maintained on the Pacific Coast in San Francisco and Los Angeles, and an office has recently been opened in Tokyo. Agencies are operated in Vancouver, Seattle and Portland.

President of the company is H. D. Mercer and Vice President in charge of Freight Traffic is J. H. McIntyre, whose offices are at 90 Broad Street, New York City.

Joseph A. de la Pena, new Pacific Coast Manager of States Marine Corp. In transportation activities since 1915, he was in Baltimore & Ohio's Traffic and Operating Departments for five years, and later with United American Lines. This company became part of American Hawaiian Steamship Company in 1922, and de la Pena continued with the company for 22 years. During the war he spent two years in the Cargo Control Section and some time as Chief of the South American Section of the War Shipping Administration and the Maritime Commission.

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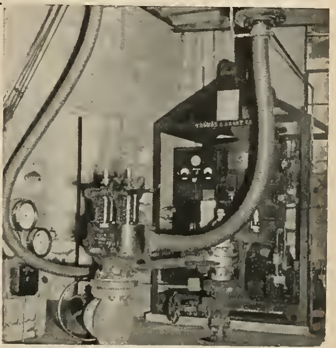

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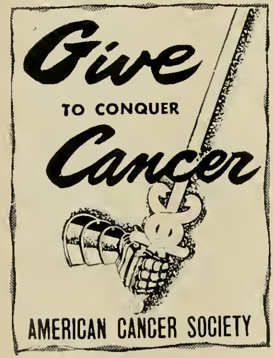

Director

Known variously as "Butch" and "Handsome Dan," Walter B. Hill has been named to the Board of Directors of C. C. Moore & Company, Engineers. The firm is agent for Babcock & Wilcox, and Walter is Marine Manager. This picture was snapped as he made the winning answer in a debate concerning boilers at a recent meeting of the Society of Port Engineers, San Francisco.

Victor Welding Display

New construction applications of stud welding, a war-time invention that is being adopted by the building and metal-working industries throughout the world, were demonstrated in a four-day display sponsored by the Victor Equipment Company, San Francisco, west coast distributor for Nelson stud welding equipment, which included a continuous showing of an 18-minute color film, "Split-Second Fastening".

E. A. Daniels, vice president in charge of sales, and Richard Heinemann, Nelson stud welding specialist in the area, were in charge of the show.

The lightweight, portable stud welding gun is used to automatically weld fastener studs to steel surfaces, enabling contractors to save from 26 to 64 per cent in the cost of applying corrugated metal and other roofing and siding materials. Equipment and machinery manufacturers also use stud welding to replace threaded bolts because time-consuming drilling and tapping operations are eliminated.

A. C. Diesel Electric Propulsion

(Continued from page 35)

ger-cargo vessel under Maritime Commission Specifications involving A. C. Diesel-electric propulsion with 15,000 SHP on a single screw and four engine-generator sets. It is hoped that a contract will be awarded and that this ship will be built.

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A Banker Discusses Devaluation

(Continued from page 77)

as a whole. It seems reasonable to feel that the internal well-being of the United States would be greater all around with 1955 exports of 12 billion and imports of 15 billion than with exports at 5 billion and imports at 3 billion. Trade means goods moving from production to use or consumption and the more goods that move the better for all. With our dominating position in the world financial picture, our immense and efficient productive capacity, and our great merchant fleet, is there any doubt that we can hold our own in world competition and still operate along sound economic lines? In 1948 total world trade was 51 billion dollars and United States trade alone accounted for 20 billion or 40% of the total. In 1948 the merchant fleets of the world aggregated 100 million deadweight tons and the United States merchant fleet alone accounted for 38 million tons of this. With all these overpowering advantages and with our total national production running in excess of 250 billion per year, surely we can absorb a few more billion in imports without harm, but with benefit to ourselves and our foreign customers.

We can further increase foreign dollar purchasing power through two other major channels—foreign investments and tourist travel. Investment of American capital abroad can be highly beneficial if its safety and earning ability is properly protected—and if it builds the productive capacity of the country concerned. In addition there should be adequate investment by the foreign nationals to assure their active interest and the retention of a proper share of earnings within the country. Americans abroad spent 479 million in 1947 and 597 million in 1948. The 1949 total is expected to top 600 million. With alert advertising and attractive tourist rates we should anticipate average American tourist expenditures of 1 billion per year or more in the not distant future. Naturally, if we are good enough to aid our foreign friends by encouraging Americans to travel abroad, we have all the right in the world to expect to take as many of them as possible over and back on American ships, and to hope that they will go bulging with dollars, and come back happily laden.

Now, in what has been presented for your consideration today you have heard no suggestions that we be generous to the rest of the world, that we extend a helping hand, etc. We have been talking business—not charity—and good business at that. Besides, to talk of generosity and the helping hand to an American audience

(Please turn to page 82)

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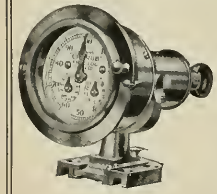

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A Banker Discusses Devaluation

(Continued from page 81)

is to insult them. We have always been generous in helping others and we always will be— it is part of our national character.

However, one cannot help wondering sometimes what the reaction of some of our principal aid beneficiaries would be if the shoe were on the other foot. This, in turn, suggests a further thought in connection with our various aid programs.

First of all, it seems sensible that we should take every precaution to assure that whatever aid we extend go to helping the country concerned actually get back on its feet, physically speaking, and back into self-supporting productivity. It will not set well with the American taxpayer to have the feeling that too large a portion of his hard earned assistance is going into non-productive channels of one kind or another. Secondly, American aid should not be made too easy to come by. Except for disaster or to avert starvation, we should drive somewhat of a bargain on every bit of aid we extend and secure some equivalent either in direct benefit, advantage, or other return of value from the country aided. Too many people in other countries do not quite fathom generosity from purely humanitarian motives. When we give generously and ask nothing in return they keep looking for the hook and not finding any, grow suspicious of our motives. It would seem better and more efficient all around to have our interest readily apparent to all.

Now if this picture seems a little bleak and rugged let me close by reading you an editorial which I noted a short time ago. "It is a gloomy moment in history. Not for many years—not in the lifetime of most men who read this paper—has there been so much grave and deep apprehension; never has the future seemed so incalculable as at this time. In our own country there is universal commercial prostration and panic, and thousands of our poorest fellow-citizens are turned out against the aproaching winter without employment, and without the prospect of it.

"In France, the political cauldron seethes and bubbles with uncertainty; Russia hangs, as usual, like a cloud, dark and silent upon the horizon of Europe; while all the energies, resources and influence of the British Empire are sorely tried, and are yet to be tried more sorely, in coping with the vast and deadly Indian insurrection and with its disturbed relations with China.

"It is a solemn moment and no man can feel an indifference (which, happily, no man pretends to feel) in the issue of events.

"Of our own troubles no one can see the end. They are, fortunately, as yet mainly commercial; and if we are only to lose money, and by painful poverty be taught wisdom—the wisdom of honor, of faith, of sympathy and of charity—no man need seriously despair. And yet the very haste to be rich, which is the occasion of this wide spread calamity, has also tended to destroy the moral forces with which we are to resist and subdue the calamity."

Apparently the writer of this editorial felt that things were a little on the rough side and that the outlook was dark, indeed. There is perhaps more than a glimmer of hope and comfort for us in the fact that this appeared as an editorial in Harpers Weekly, the issue of October 10, 1857.

Maritime Day Ball

The fourth Annual Maritime Day Ball, sponsored by the San Francisco Alumni of the United States Merchant Marine Cadet Corps, will be held at the Senior Officer's Club at Treasure Island on May 19. The Ball will be semi-formal and dancing will begin at 9 p.m.. Bids may be obtained by contacting Co-chairmen R. Schulke, U. S. Pipe and Foundry, or J. Stasek, Pacific Far East Line.

Responsibility of Master For Fights Aboard Ship

(Continued from page 59)

and under all circumstances amount to negligence, although it might be observed that if two men on shore engaged in a fight in a public place any policeman who did not try to stop it would certainly be derelict. What I do hold is that where a ship's officer knows that a drunken sailor, aggressively quarrelsome, in possession of a whiskey bottle, and 'to all accounts in a bad mood' (Log) is going to fight another member of the crew aboard ship, it is his duty to do what he can to prevent the encounter. In the present case the officer from the launch was on deck some eight minutes before Bennett got there and most of the other officers of the ship were also where they could have been apprised of what was going to happen. The probabilities are that they all knew it, although a fact finding on that point is not necessary.

"Of course, the actual knifing occurred so quickly that none of the officers could have prevented it and it is not intended to imply that they knowingly countenanced anything of the sort. Still it must be remembered that this was not to be a boxing match or sporting event but a 'grudge' fight, with a drunken sailor involved, and it is not beyond the realm of forseeability that a weapon might be used."

The fact that the injured party happened to be a bystander is immaterial. Under the Restatement of Torts it is provided as follows:

> "If the actor's conduct is a substantial factor in bringing about harm to another, the fact that the actor neither foresaw nor should have foreseen the extent of the harm or the manner in which it occurred does not prevent him from being liable."

In another section of the Restatement of Torts a similar situation is described in the following manner:

> "If the realizable likelihood that a third person may act in a particular manner is the hazard or one of the hazards which makes the actor negligent, such an act whether innocent, negligent, intentionally tortious or criminal does not prevent the actor from being liable for harm caused thereby."

The breach, of course, was of the duty to protect the personal safety of Jensen. Bennett was the third person whose criminal act caused the harm. The Court held that Jensen was not guilty of contributory negligence because, as the cases have held for so many years, when the plaintiff in an attempt to save a third person from harm exposes himself to danger, he should not be penalized by a finding of contributory negligence on his part. The Court found in favor of the libelant to the extent of five thousand dollars in addition to a substantial maintenance award.

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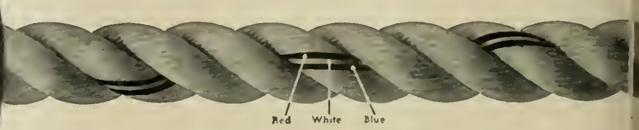


Pacific Marine Review

Old Man of the Sea

THERE is reason for the assumption that shipyard repair activity is just about at its postwar low, and that it will go up from here. It should. Twelve hundred ships, from 4 to 11 years old, will be needing important repairs and overhauls as Coast Guard and Classification surveys recur. And as developments in hull equipment and machinery offer more efficient operation to help meet increasing competition. These repair and betterment potentials will benefit the operators, and, of course, the yards.

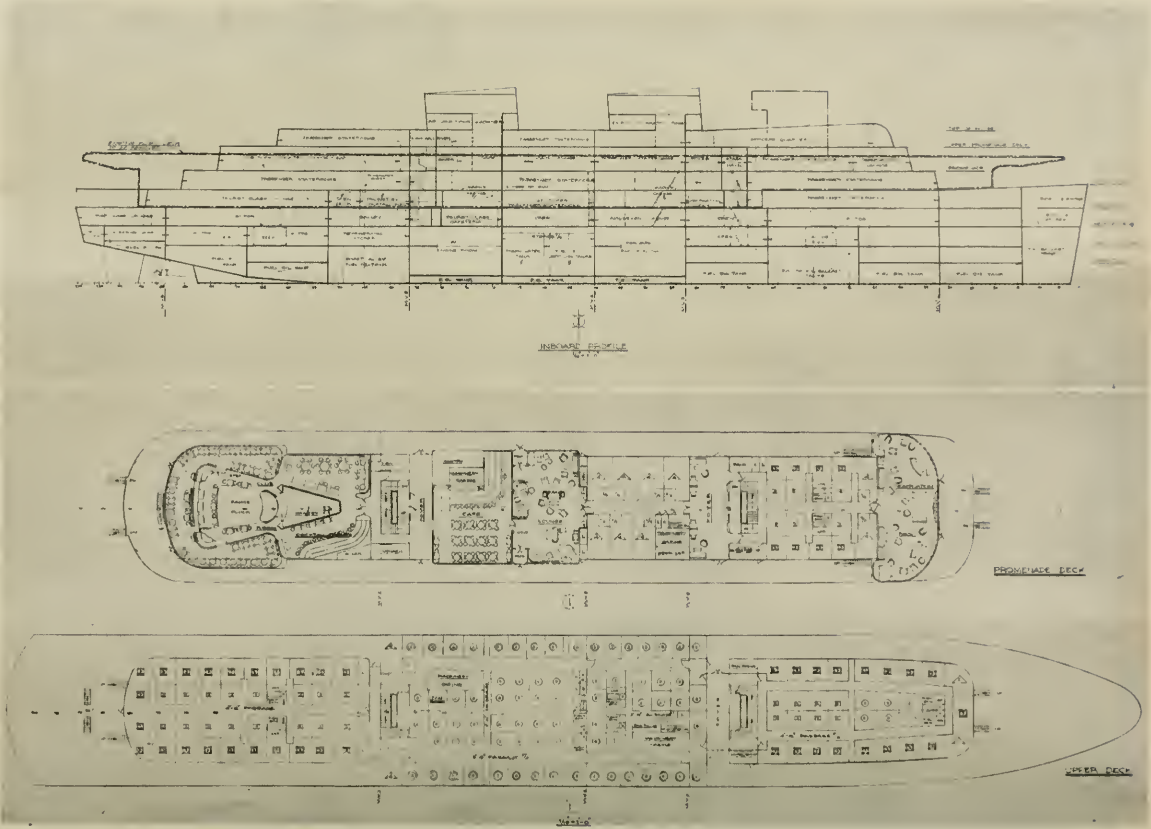
There are continuing obstacles in front of both operators and shipyards, however, which they should not be forced to overcome, for they stem from government departments. It is one of the paradoxes of the business that while one section of the government strives to build up the Merchant Marine, other sections determinedly maintain policies which obstruct it. One such department is the Navy, which within itself is divided on maritime policy. In general, the Navy wants a strong Merchant Marine, but its own rulings undermine private operation. Other departments include the ICC, the Budget Bureau, the Panama Canal administration, and the Congress itself. We have referred to each of these in the past and could enlarge on them now. Unhappily, an industry which depends so largely on the government must expect to have its energies and ingenuities and ambitions sapped by a dominating master—a master who does not profit from experience, and who rarely looks ahead. Take the shipyards, for instance.

When a trend appears in any government department there seems no limit to its development. It should not be necessary for the Navy to absorb the functions of private shipyards in order to maintain a total of employment. Thus they manufacture many commercial items such as rope, paint, flags, electronic devices, artificial limbs and packing boxes. They even roast coffee in a big way. Then, in the name of economy—sometimes called unification—they cut down on the use of commercial shipping in favor of Navy-owned ships, and repair their vessels in Navy yards when private yards are idle, but lay up combat vessels because of limited funds.

We would like to see Navy vessels kept ready, and not in moth balls; and we would like to see the Navy's money spent in training, rather than in continuing in competition with business establishments which could otherwise absorb these non-Naval employment rolls.

Ship repair yards should not be made the victims of government competition. If shipyards and drydocks are not maintained, the port cities suffer, the Navy suffers, the Nation suffers. Without shipyards there would be no American shipping; for ships of foreign flags would take over, even as some people in Washington think they should. We could not even handle their emergency repairs.

And it is just as important from a defense standpoint that private yards be maintained with their skilled personnel and management as that the Navy repair non-combat ships. Private yards built those ships, and can service them. It is not alone the Naval establishments that must be kept busy—a fact which the Navy, in its anxiety to keep its establishments intact, seems to overlook.



Inboard profile and deck plans for Promenade and Upper Decks on the proposed coastwise vessels for the San Francisco and Los Angeles Navigation Company.

18,624 automobiles or an average of 600 passengers and 80 automobiles per one-way trip.

The present machinery particulars for the vessels under contemplation include two Skinner Marine Uniflow reciprocating steam engines, of 4500 horespower each, with four Babcock & Wilcox two-drum D type boilers producing an estimated 20-knot speed.

The contemplated conversion would provide every modern safety-at-sea device, including public health and fireproofing requirements.

The deck plans indicate 36 parlor suites, 78 deluxe outside suites, 15 deluxe inside suites, 66 roomettes, 140 bedrooms and 20 single bedrooms, giving almost any accommodations desired. The 100 passenger automobiles would be stowed in the tween decks and loaded and unloaded quickly through large side ports and by means of deck elevators.

The basic fare is planned at $10 with prices for suites ranging from $22 for parlor suites, $16 for outside deluxe suites, $12 for inside deluxe suites, $8 for roomettes, $5 for double rooms and $2 for single rooms. The automobile transportation would be $15. These fares are lower than those formerly charged on the *Yale* and *Harvard*.

Proprietors and architects of the project are Consulting Naval Architects Michael J. Ryan and Edward Macauley of San Francisco.

Also of great interest to the Pacific Coast is the probability that the conversion work on these ships will be done in a Pacific Coast shipyard with a consequent public relations benefit to the company.

Salvage of S. S. "Steel Chemist"

THE refloating of a big ship after it has been almost hopelessly stranded is a dramatic event and one that is of great interest to many elements in the maritime industry. First of all, assuming that there are no human casualties, it is important to the owners who would otherwise lose substantially and be unable to replace the vessel at an early date or at anything near its original cost. It is important to the cargo owners regardless of insurance, and it is of great importance to the underwriters, in this case running into millions of dollars.

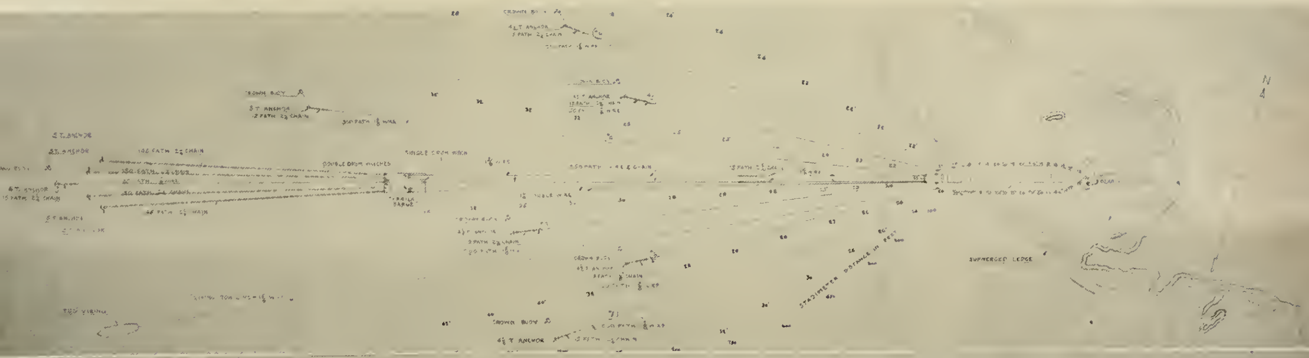
The saving of a ship is also of profound interest to those whose skills and equipment were proven on one of the toughest of assignments; and important to the salvage master who, in this instance, tops many years of similar personal triumphs.

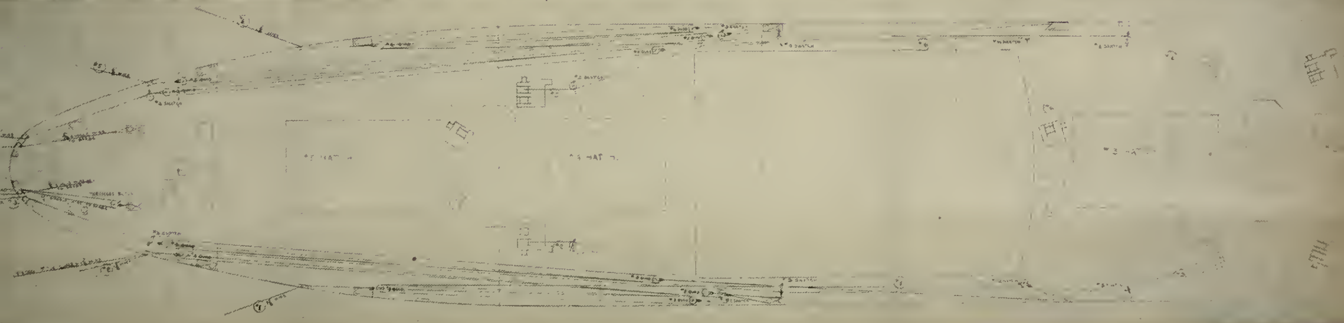
Walter Martignoni of the firm of Pillsbury and Martignoni. One of the world's best known marine surveyors, he was salvage master on the "Steel Chemist" job.

In the following laconic report there is to be read none of the drama, the responsibility, the human and property values involved in a great venture. You have to read the detailed story which follows to get the engineering skill, the invaluable equipment, and the vital timing which saved the great ship and most of its cargo. To float the *Steel Chemist*, Pacific Towboat & Salvage Company, and Smith-Rice Derrick Barges, Inc., joined forces and together rendered successful salvage services to the *Steel Chemist* under the capable direction and control of Walter Martignoni as salvage master. Fortunate indeed for the owners, the skippers, and the underwriters that such skills and equipment were available, and called promptly into service. The engineering skill was primarily that of Walter Martignoni, of Pillsbury and Martignoni. The equipment was fundamentally the Smith-Rice Derrick and Salvage Barge No. 5. Martignoni had the able collaboration of William H. Collins of Pacific Towboat & Salvage Company, Captain Edison D. Brown, and Charles Rice, George F. Mitchell and L. P. Kelly of Smith-Rice Derrick Barges, Inc. Floating equipment included Pacific Towboat & Salvage Company's tug *Kanak*, the San Pedro Tug Boat Company's tug *Relief*, the tug *Viking*, and the tugs *Crowley 9*, *Crowley 27*, and *Crowley 24*. Also the *Pacific Retriever*, *Palomar* and barge *Hemlock*. The pooling of the equipment of the joint salvors did the trick. Without such pooling, and the pooling of engineering and salvaging skill, success might not have been possible.

The *Steel Chemist*, with 7,992 tons of valuable cargo on board, had stranded in a thick fog on the south side of the northwest corner of San Nicolas Island approximately 70 miles off the coast of California early on the morning of April 10, 1949. She was ashore for her entire length on a rocky and gravel beach with a pinnacle rock ledge beneath her No. 4 hold. There was an exposed rock ledge about 225 feet from her starboard bow and exposed pinnacle rocks 150 feet on her port bow. A reef breaking at half tide was off her port quarter. She was exposed to all weather conditions, in the position shown on Sketch No. 2. She was floated at 2150 on April 15, 1949, and was thereafter towed into Long Beach Harbor where she was securely moored at Pier A, Berth 1, at 1300 on April 16, 1949.

The values at risk to the underwriters of the *Steel*





Top: This sketch (No. 2) shows the "Steel Chemist" resting on a submerged ledge. The figures around the hull indicate the depth of the water in feet. The greatest depth is 23′ 6″ at the stern and the minimum depth 18′ at several places along the port side. The ship's draft of 29′ 5″ suggests how far out of the water the hull stood. The ship had run ashore on one of the season's highest tides at a better than 16 knot speed. Stretching from the stern in this sketch are nine 1⅝″ steel wires and a double length of 1¼″ wire. Five of the wires go to 4½-ton anchors and one to a 5-ton anchor. Leading from the Smith-Rice Derrick Barge are four 2¼″ chains to 5-ton anchors and one 1⅝″ wire to the 7-ton anchor. A 1⅝″ wire runs from the ship to the tug "Viking."

Bottom: This sketch (No. 3) shows the complicated system of attaching the cables to the ship in such a manner that when power was applied, the pull at all points was equal.

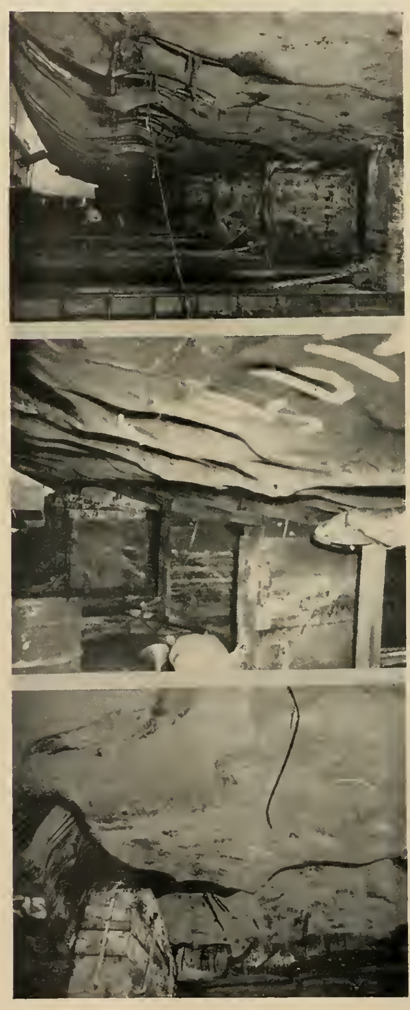
Chemist were very great. She was insured for $2,500,000. The cost of repairing the damage suffered by her was $418,235.00. Her cargo was valued at approximately $1,570,600. After deducting the cost of repairs, there was a salved value to the underwriters and owners of approximately $3,651,765, less owner's incidental expenses. That great sum was at stake and was saved to them.

The *Steel Chemist* is a C-3 cargo vessel, built in 1943 by Ingalls Shipbuilding Corp., and owned by Isthmian Steamship Lines. She is a steel vessel of 4560 net and 7956 gross tons, 468 ft. 5 in. long, 69 ft. 6 in. beam, and 29 ft. 5 in. draft. Homeward bound from Netherlands East Indies by way of Los Angeles with a 7992 ton cargo of sugar, shredded coconut, rubber, and general, she stranded in a dense fog on San Nicholas Island, near Santa Barbara, California, on April 10, 1949.

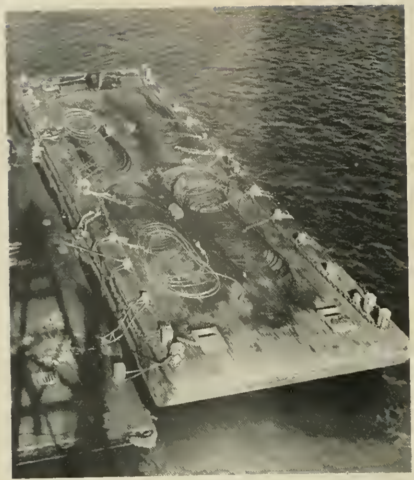
Martignoni was engaged by the joint venture as salvage master by telephone to San Francisco, and he made tentative preparations for a "salvage plant" by telephone before flying to Long Beach. The advance preparations included the assembling of necessary and available equipment on board tugs and barges in readiness for towing to scene of stranded vessel. A day's conferences were held with salvage contractors and owner's representatives, and by radio telephone with Capt. Collins of the tug *Kanak* at the scene of the wreck. Capt. Collins reported that it was imperative that steps be taken first to preserve the vessel and cargo from further damage while plans for floating the ship were carried out. The Coast Guard Cutter *Diligence* had taken a manila line from the *Steel Chemist* at 1840 on April 10, and the *Kanak* had taken over with a steel line at 2100, and with anchors planted and engines going full speed ahead, maintained a steady strain on the stranded vessel to prevent her broaching broadside to or working further ashore. Approval was obtained for the Navy tug *Viking*, which was at the scene, to assist. Martignoni and Charles Rice of the Smith-Rice Company reached the *Steel Chemist* through continuing heavy weather at 0600 on April 12.

The ship had stranded for its full length on the south side of the northwest corner of the island at about 0650 on April 10, while proceeding at full speed in the fog on top of one of the highest tides of the year. The draft at time of stranding was 22′ 04″ forward and 25′ 10″ aft, the vessel having lifted about 1 foot forward and 2 feet aft, when stranding, on a rock and gravel shelving with a pinnacled rock ledge beneath No. 4 hold. The reef was breaking astern of port quarter, at half tide, and the ship listed 5° to port. She was exposed to all weather conditions, excepting for some protection from the northeast, and open to heavy seas and swells resulting from the combination of exposed location and peculiar currents in that area. All double bottoms, except No. 4 starboard and No. 6 port and starboard were leaking beyond control. The unbroached double bottoms, and also the after peak, were ballasted to further weight the ship on the bottom while beach gear was being laid out.

Considering the initial loss of buoyance at stranding, the additional loss when practically all double bottoms were open to the sea and flooded, and further that tides were receding, any restoration of the lost buoyance could be accomplished only by displacing the flooded areas with air and removing the weight of some cargo. Adverse weather prevented mooring any type of vessel alongside



Three views of the ship's bottom showing the scraping damage caused in passing over the reef, and the "settling" damage caused as the vessel settled its full length onto the rocks.



Barge 2735 with part of its rope and steel cable ready for the salvage task on the "Steel Chemist."

to receive cargo, so cargo was jettisoned until weather altered.

The plan determined upon was the jettisoning of the lowest value cargo (sugar), increasing the ship's buoyancy aft and trimming by the head to relieve the full flat surface pressure. The vessel in this condition would pull with less effort, and the floating effect of heavy swells would be more effective with the after end lighter on the bottom so the hull could be eased over the hard pinnacled area beneath No. 4 hold. For jettisoning purposes an opening was cut in the ship's side, and the discharge begun.

Not anticipated was the running short of fuel oil in the *Steel Chemist*, and the need for replenishment, which required the *Viking* to return to Long Beach for 586 barrels of Navy fuel which was pumped into the ship's bunkers, and the need for the *Viking's* subsequent trip to replenish her own supply. She also brought out 12 additional workmen.

Beach Gear on the Smith-Rice Derrick Barge No. 5. The big anchor in the center is 7 tons.

The carefully planned laying out of beach gear on barges and vessel's deck, and the intricate securing of wires to their respective moorings paid off when the perfectly timed pulling began. The attaching of cables over drums on hauling winches and to bitts and lugs was the work of a genius.

When all was ready the tug *Relief* maneuvered the giant Smith-Rice Derrick and Salvage Barge No. 5 into position 1500 feet astern of the *Steel Chemist* and secured with four 5-ton and one 6-ton anchors. Cables to the ship were attached as diagrammed in sketches 2 and 3. A signal system was arranged between the ship and all attending floating equipment.

From the hour 1400 to 1630 on the 15th, compressed air was applied to the various double bottom tanks to displace the water. Then, with the objective of lightening the vessel more aft than forward, double bottoms 1 and 2 and fore peak were left partly flooded.

Key unit in the big salvage operation was Smith-Rice Company's Derrick Barge No. 5. Length 135 ft.; breadth 50 ft.; depth 11 ft.

The boom is fabricated steel and is 110 ft. long from its base. The main hoist is powered with a 360 HP torque drive gas engine. The swing engine and deck machinery are powered with electric motors. Generators are 200 KW Diesel. The lifting capacity of No. 5 is 100 tons. Base is Long Beach Harbor.

With heavy swells from the sea increasing, momen-

(Please turn to page 40)

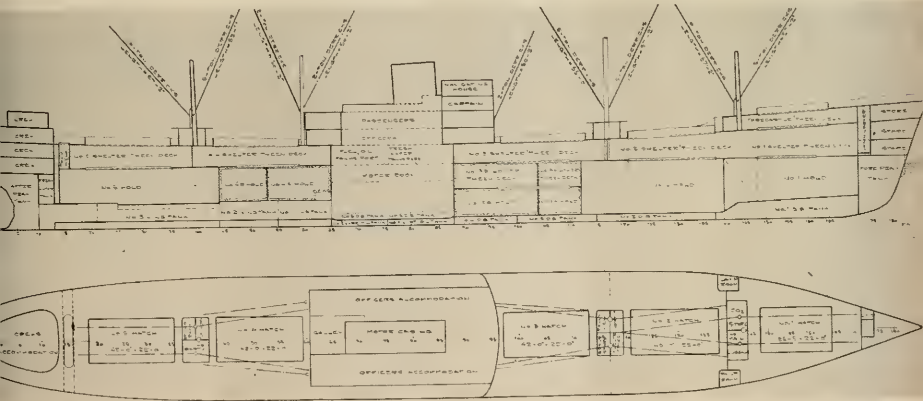
Westfal-Larsen's new motorship "Berganger."

The "Berganger" — Interocean's Newest

FEW SHIPS have ever arrived in San Francisco meriting more wholehearted praise than the new Interocean Line motorship *Berganger*, owners; Westfal-Larsen & Co. A/S, Bergen, Norway. For her purpose the ship seems to be just right in structural characteristics and in accommodations for both cargo and passengers. The vessel is 484 ft. 1½ in. long over all, with a molded breadth of 61 ft. 1¼ in. and a molded depth of 39 ft. 2 in. As a closed shelter-decker the summer draft is 28 ft. 7 in. and the deadweight tonnage, 9,875. As an open shelter-decker the summer draft is 26 ft. 6½ in. and the deadweight capacity 8,610. Passenger capacity is 12.

The propelling machinery is Kockums-M.A.N. 8-cylinder 2-stroke double acting diesel engine of 8,000 brake HP at 110 rpm. The speed on her trials was 20.2 knots. She was built by Kockums, Malmo, Sweden, and

Inboard profile and deck plans of the "Berganger."



Corner of owner's quarters. George von Erpecom made the round trip with the ship.

officers report that on the maiden voyage, sailing light, the ship behaved perfectly.

At Pacific Coast ports she was loaded to the last inch of her cubic capacity with grain, cotton and general cargo. The refrigerated holds took a capacity of apples and citrus fruit. It is expected by the Interocean Steamship Corporation, the general agents for Interocean Line in this country, that this and other vessels of the Line will continue to enjoy near capacity cargoes in the predictable future. The capacity of the holds is 484,000 bale cubic feet or 524,860 grain cubic feet. Of these totals 84,405 cubic feet is refrigerated at —5° C. and 14,860 cubic feet is for deep frozen cargo at —15°C.

Cargo is handled by 16 derricks of which four will lift 10 tons, eight will lift 5 tons, and four will lift 2 tons. Electric cargo winches and electric topping winches provide the power.

Steering gear and windlass are electric. Pontoon hatch covers are steel on weather decks.

Safety equipment includes long and short wave telegraph and telephone and direction finder, also Sperry radar, Sperry gyro compass and autopilot and Hughes echo sounder.

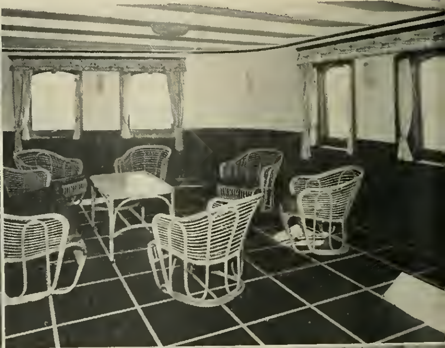
Passenger Accommodations

The passenger staterooms, double or single, as well as the owner's, captain's, and officers' quarters, present a

Top: Main Lounge.
Bottom: Card Room.

Top: One of deck verandas.
Bottom: Dining Saloon.

Pictures by Otto Broxson of Allied Photographers



Captain's Day Room and corner of Captain's Office, at left.

Single cabin.

Pictures by Otto Broxson of Allied Photographers

model of the joiner's skill. Perfectly matched birch, rosewood and mahogany predominate in the interiors, with teakwood on weather fronts and Swedish pine in exterior ceilings. Washable walls and finely made upholstered furniture and drapes suggest the finest hotel or home equipment.

The pictures of the interior furnishings on these pages give some indication of the comfort and beauty of the interiors but they fail completely in showing certain ship planning which sets the vessel apart in its provision for the comfort and pleasure of its occupants. Wide corridors is one item too often overlooked by architects. But outstanding in anticipating passengers' pleasure is the location of the main dining room. It extends across the superstructure and faces toward the stern of the ship. This permits the opening of windows without the discomfort of head winds, and the 18 knot sea speed is more than adequate to prevent drafts. The view from the dining room is a sweeping one and is practically unobstructed.

The crew's day room would do credit to any vessel and is lavishly equipped with games and reading materials as well as a radio receiving set which can be tuned to world-wide broadcasts.

Interocean's Twenty Years

COINCIDENT with departure of the new M.S. *Berganger* from the Pacific Coast to Europe on April 27, Westfal-Larsen's Interocean Line celebrated the completion of its twentieth year of operation. The Line was originated by Harry Brown and Erik Krag of Interocean Steamship Corporation, who have ever since served as Pacific Coast Managing Operators of the Line. They also operate in similar capacity for a number of other companies. The Interocean Line maintains a popular frequent express, freight, refrigeration and passenger service between the Pacific Coast and Belgium, France, Holland and Germany.

The relationship between the Westfal-Larsen firm and Brown and Krag has thus been continuous and intimate ever since 1930. Chairman of the Board of Westfal-Larsen, Mr. George von Erpecom, is making the round voyage on the *Berganger.* He raised the 20-year flag on the vessel before sailing from the Pacific Coast.

The representation on the Continent of Europe for Interocean Line is centralized through Vinke & Company of Rotterdam. This old and strongly founded company holds the agency for Holland with offices at Rotterdam, Amsterdam, et cetera, and for Belgium with offices at Antwerp, Brussels, et cetera. In France the

George von Erpecom, Chairman of Board, Westfal-Larsen & Co., Bergen, Norway, receiving Interocean Line 20-year special house flag presented in San Francisco April 21 by Erik Krag at a reception on board ship.

Corner of private office of President Brown and Executive Vice-President Krag showing cabinets and glass pillars containing ship models.

agents are Eugene Grosos & Company, while Lambert Bros., Ltd., London, are agents at United Kingdom ports. All of these firms have been Interocean Line agents since the inception of the service in 1930.

As distinguished from the Interocean Line, Interocean Steamship Corporation, in the capacity of general agents, maintains head offices at San Francisco with branches at Los Angeles, Long Beach, Portland, Seattle, Vancouver and New York. The Corporation has grown to the position of one of the three largest shipping agency firms on the Pacific Coast. The "Interocean Family"—executive officers, staff and personnel totalling about 100 people—has earned an important place in the marine industry through the proper know-how and close attention to the needs of the shipping public.

A Little History

Both Brown and Krag are notable figures in the shipping world. Long associated with traffic matters before Interocean, Harry Brown served with the Southern Pacific, California & Hawaiian Sugar Refining Company, and the Dyson Shipping Company. He has travelled extensively throughout the United States, the Orient and Europe, and has a wide acquaintance and friendship with exporters and importers in this country and abroad. His hobby is racing and thoroughbred horses.

Harry Brown, President of Interocean Steamship Corporation.

Erik Krag was born in Denmark and his entire career has been confined to ships and shipping. After coming to San Francisco in 1914 for the East Asiatic Line, he was for several years manager of European services for General Steamship Corporation. He has taken great interest in the Gjoa Foundation which he founded in 1939, its purpose being the restoring and maintaining of the famous sloop *Gjoa*, first ship through the Northwest Passage, now fully restored and on permanent display in Golden Gate Park, San Francisco.

Krag owns one of the best collections of ship models on the Pacific Coast. An ardent horseman and breeder of blooded livestock, he spends his time when away from the ships on his Ranch located on the shore of Monterey Bay, South of San Francisco.

Special hat for a special event! Executive Vice-President Erik Krag of Interocean Steamship Corporation—an ardent horseman — donned his famous "ranch hat" for welcoming the "Berganger" . . . a chapeau Eric usually disports at his Aptos S & S Rancho on Monterey Bay.

After the formation of the Interocean Line, its first vessel was the original M.S. *Brandanger*, owned by Westfal-Larsen & Company now replaced by a new modern ship by the same name. She was followed by a chartered vessel, the M.S. *Childar*. Next came the M.S. *Heranger*, and ever since the Line has been operated with "Anger" ships only, the suffix "anger" meaning a small inlet or fjord.

When the Interocean Line building program is completed in 1951 there will be seven fast modern vessels in operation on this Line, namely the *Berganger* and her two sister ships *Moldanger* and *Risanger* now on the ways, also the *Brandanger*, *Taranger*, *Sandanger* (now building), and *Trondanger*. The latter ship will be the only prewar vessel in the Line and she is now undergoing a complete classification overhaul in Europe and will be a fine running mate to the other six new vessels of the Interocean Line.

Shell's Probolog In the Marine Industry

THE Probolog, for many years an instrument of recognized value in power plants and refineries, has finally entered the marine industry. During the last weeks of March, highly successful examinations were performed on the main condensers of the S.S. *Mission Santa Ana* and the U. S. N. T. *Pamanset*. In the case of the first vessel, armed with an exact picture of the condition of the tubes, the operators were able to avoid a substantial repair charge. In the second case, the true condition of the tubes was ascertained so that repairs will be made when the ship is available.

The Probolog was invented and perfected during World War II by engineers and metallurgists of the Shell Development Company. Like shipping men, these people were frequently confronted with the problem of what to do about a condenser or other heat exchanger in which tube failures were beginning to cause trouble. You can't look down the length of a twelve foot tube and see what is going on. With some tubes going bad, it is always a guess as to whether adjacent tubes would also fail. The best means available for predicting fresh failures was the keeping of a history of the heat exchanger. Even with carefully maintained statistics the results were uncertain and many a condenser was retubed before such expensive procedures were necessary.

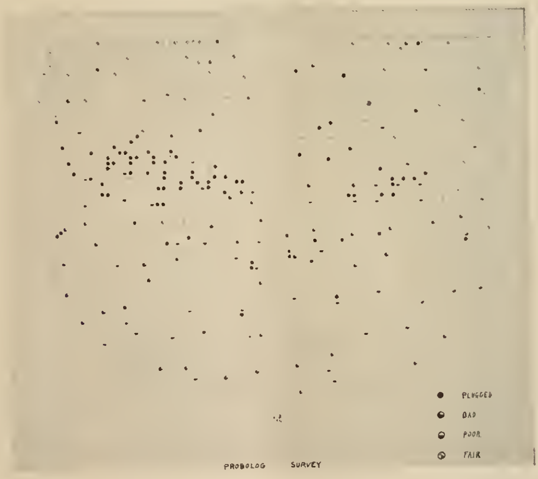
Having the new science of electronics at their disposal, the Shell engineers proceeded to build themselves a long "eye" by means of which they could look into small tubes and not only see their condition but make a chart of it. The probe was designed to be inserted in a tube at the end of a long cable. Tiny coils in the probe produce an electrical field. Distortions of this field caused by defects in the tube induce changes in the electrical characteristics of the circuit that are amplified to operate the pen and produce a written record. The Probolog soon showed that, if the tube were perfect, the pen drew a straight line on the chart; if the tube, on the other hand, contained some imperfections, the pen went through some very knowing convolutions. To operate this sensitive but rugged instrument, all that was required was the interpretation of this new and unusual written language.

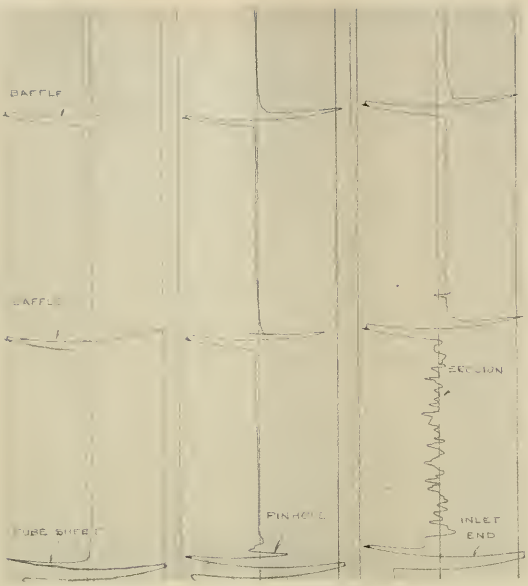
In the S.S. *Mission Santa Ana* the copper-nickel tubes of its main condenser had been in use for five years without failure in the upper half (second pass), although the lower half had been retubed once and was ready for a second retubing. But could the tubes in the upper half be relied upon to give continued service or should they be renewed now? The Probolog answered the question without room for doubt. The upper half is still good and should continue to give service for at least another year before tube failures begin to be annoying. Based on these obvious results of the examination, it was decided to renew only the lower half of the condenser at a considerable saving in cost.

The S. S. *Pamanset,* although equipped with a similar condenser, posed an entirely different problem. In this vessel, the entire tube bundle had been renewed two years ago and one-half of it had been renewed one year ago. Despite the efforts of the operators, tubes were constantly failing. The condenser was Probologged and the instrument indicated that the entire bundle would have to be renewed at an early availability.

The illustrations show charts for

"Probolog" Survey for the U.S.N.T. "Pamanset."





"Probolog" charts for three individual tubes as logged on the "Mission Santa Ana" and the "Pamanset."

three individual tubes as logged on these vessels. The first figure is a recording of a perfect tube. Except for the deviations at the baffles, the pen drew a straight line. The second illustrates a pinhole failure in an otherwise sound tube. The third is a good example of extensive erosion of the metal that has occured at the inlet end of the tube. Although this tube was still in service, it is safe to say that in a short time failure would occur.

The Probolog has been in use for years in many West Coast oil refineries and power plants. To introduce it to the marine industry, Naval Architect Morris Guralnick recently arranged for its demonstration at a meeting of the Society of Port Engineers at San Francisco, and is making tests like those described herein. His office is in the Transport Building, Foot of Mission Street, San Francisco. The Shell Development Company has prepared an illustrated pamphlet describing the workings of the Probolog in detail which may be obtained on request from Morris Guralnick.

Salvage of S. S. "Steel Chemist"

(Continued from page 34)

tarily raising the water line, and with all men at their respective stations, a heavy strain was taken on all sets of beach gear and pulling cables from Derrick Barge No. 5 and the *Viking's* manila hawser. With each succeeding series of swells the vessel responded to the heavy pulling and at 2100 started working slowly

(Please turn to page 74)

Left: Charles Rice of the Smith-Rice Compaany, joint salvor with the Pacific Towboat & Salvage Company on the "Steel Chemist" venture. Days and nights of work on the part of the salvagors and the crew of the vessel paid off in the successful saving of the ship with very few hours to spare.

Clam shell buckets discharging sacked sugar from the hold. A total of 950 tons was thus removed.

This picture shows the proximity of the vessel to the shore. A reef extends from the shore right under the stranded vessel. The barren nature of the island is also indicated.

Ship Classification Societies

By WILLIAM B. WARREN

Principal Surveyor for the Pacific Coast,
American Bureau of Shipping

William B. Warren

IN VIEW of questions asked from time to time it would seem that there must be a rather general feeling of vagueness or obscurity in the mind of the man on the street and to some in the marine industry as to what the organization, purposes and functions of a Ship Classification Society may be, and how such organizations operate. Perhaps a brief discussion clarifying some of these matters may be of general interest. In this article the American Bureau of Shipping is to be used as a basis for discussion, it being typical of other classification societies, and the one with which the author is familiar through over twenty years experience.

What is the American Bureau of Shipping? Is the American Bureau a Governmental agency? Is it supported by the Government? Does the Bureau write marine insurance? Is it organized in a manner similar to the usual businesss organization?

To all of the above questions the answer is no; and the purpose of this paper is to clear up some of the questions and to discuss the purpose and function of the ship classification society.

Several of the principal maritime nations of the world have their own classification societies. Such societies usually operate as private organizations and receive no financial support from the marine industry or from the government other than for services rendered. However, since some of the functions and services performed are national or international in character, recognition by their government is given qualified classification societies and they are authorized and designated by them to carry out certain duties in connection with Federal requirements on ships; for example, assignment of load lines. It is thus that they become recognized as the national classification society of a particular country and the impression given that they are a part of the federal government. While classification societies are generally referred to as the society of a particular country their activity is not restricted to vessels of any particular nationality and for this reason they take on an international aspect.

In the United States the American Bureau of Shipping is recognized as our classification society, it having been organized in 1862 with headquarters in New York at which time it was known as the American Shipmasters Association. This was in the days of sailing ships and at that time the Bureau conducted examinations for competency and issued licenses to masters and mates of vessels, in the absence of Federal regulation.

In Great Britain, Lloyd's Register of Shipping, with headquarters in London, was organized in 1760 and is recognized as their classification society. In France there is the Bureau Veritas International Register of Shipping and Aircraft, with headquarters in Paris, which was organized in 1828. Italy's classification Society, known as Registro Italiano Navale, was organized in 1861, and is located in Genoa. Norway has its Det Norske Veritas, sometime referred to as "Norwegian Veritas." It was organized in 1864 and is located in Oslo. In Germany, the Germanischer Lloyd was established in 1867 with headquarters in Hamburg. In Japan their classification society is known as The Japanese Marine Corp., is located in Tokyo, and was organized in 1899. Russia and Estonia also have a Register of Shipping which performs the functions of a classification society.

While some of the classification societies may vary somewhat in their organization, the following is given as the operating structure of the American Bureau. The Bureau was incorporated in 1862 under the laws of the State of New York as a non-profit organization. As a result there is no stock issued and there are no dividends paid. Operating revenue is principally derived from fees rendered for surveys carried out which are paid for by the shipowners. These fees are used in connection with the operation of the Bureau and in normal times income is kept very close to the operating expenditures. The Bureau participates in research outside and maintains its own laboratory at its head office where it is equipped to carry out its own investigation of certain material problems. Under management and personnel there is the Chairman of the Board of Managers, President, Vice President, and Secretary-Treasurer and Assistant Secretary-Treasurer, who are active officers and who carry on the business of the Bureau in conjunction with the Board of Managers. It should be pointed out that the Board of Managers, a group of about 40 men, is made up of people who are recognized leaders in the industry. As a result our operation is under their supervision and they have a voice in all activities of the Bureau. The Chief Surveyor is the technical head of the Bureau and he in turn supervises a technical staff, as well as the surveying staff in the field. His staff is divided into groups who specialize on hull work, engineering, loadlines, tonnage, metallurgy research and reports and all are specialists in their field. In addition to the above there are technical committees on Naval Architecture, Marine Engineering, Electrical Engineering, Materials and Welding. The members on these committees are chosen from the industry, and as a result of their recognized standing in their particular field. They have a voice in the formulation of classification rules and through them the various interested parties in the industry are represented. The actual survey work in the field is carried out by the surveyors who are classified as exclusive, or non-exclusive. Throughout the U.S. nearly all representation is by exclusive surveyors. These surveyors work on a salary, and under a principal surveyor for each port who supervises the activities of the Bureau in such ports. Non-exclusive surveyors usually are appointed throughout various foreign ports where it is felt the Bureau requires representation, and they are appointed for their qualifications and knowledge of ships and shipping in their particular area.

As in all worthwhile things there was a need for a well directed organization or clearing house for performing the various functions of a classification society, the details of which are discussed later, and to have a staff of well trained surveying personnel established throughout the principal ports of the world. To reach a proper background one should go back to the story of Lloyds Coffee House in London where the various parties interested in ships and shipping used to gather to exchange information as to sailings, ship casualties, cargoes and almost any subject in connection with shipping. As sailing vessels were subject to more of the marine hazards than the modern powered ships of today, any information as to ships' movements and activities was of vital interest. As a result Lloyds Coffee House became a clearing house for all sorts of information concerning the industry and this information was of particular value to the marine underwriters.

It then developed that certain data regarding the type of vessels, materials, rigging and ship's personnel became of considerable importance in determining risk to the underwriters. Later developments indicated it would be well to have practical rules for construction, and a place where such rules could be established, data published and a running record kept of all information of value to the shipowners and underwriters. Inevitably, the control of such matters passed from the underwriters, and ship classification societies came into being to represent the entire industry and perform an important and useful function to all.

The purpose and functions of the ship classification society were discussed in a paper by J. L. Luckenbach, then President of the Bureau and now Chairman of the Board of Managers, before the Society of Naval Architects and Marine Engineers in November 1943 and are listed as follows:

1. The preparation of rules for the construction of hulls and machinery, including material specifications and detail regulations for periodic surveys, etc. These rules are modified from time to time in order to keep pace with developments in shipbuilding and marine engineering, and are the standards by which the eligibility of vessels submitted for classification is determined.

2. The analyzing by the technical staff of plans for hull and machinery of vessels for which application for classification has been made. These plans must meet the Bureau requirements if classification of the vessel is to be granted.

3. The inspection by the surveyors of ships during construction; the inspection of propelling and auxiliary machinery and vessel's equipment; and testing of materials entering into the construction of hull and machinery.

4. The issuance of certificates of character for merchant ships, their machinery and equipment, such as classification certificates, etc. based on surveyor's reports.

5. The carrying out of load line surveys in accordance with U.S. Government regulations and the granting of load line certificates after the load lines on the vessel's sides have been found to be in accordance with the freeboards assigned. In the past few years the Bureau has been granted authority by the following countries to issue load lines to vessels of their registry: Belgium, Brazil, Canada, Dominican Rep., Denmark, Sweden, Greece, Israel, Netherlands, Philippines Rep., Portugal, Liberia, Panama and Honduras.

6. The carrying out on vessels in operation of the periodic surveys required by the "Rules" as a condition of maintenance of class, including surveys after damage.

7. The investigation by the technical staff of matters pertaining to the "Rules" and the analysis of the surveyors reports of surveys made on vessels in operation, with a view to determining whether amendments in the existing rules have been shown by experience to be desirable.

8. The carrying out, when specially requested by owners and builders, of technical investigations relating to the structural design, construction, and maintenance of merchant ships.

9. The publication in the RECORD of the essential particulars of the hulls and machinery of all vessels classed with the Bureau, the classification assigned to each particular vessel, and the dates when the various surveys were carried out. Particulars of American Vessels not classed with the Bureau and also of the larger foreign vessels which regularly visit United States ports are also given in the RECORD for the information of the subscribers.

10 The preparation of statistical information: Information concerning vessels under construction and various statistical tables are published in the BULLETIN of the American Bureau of Shipping, which is issued monthly.

The Canadian Board of Steamship Inspection has

(Please turn to page 58)

Preventable Losses in Export Packing

THE subject of unsound packaging methods as applied to United States export shipments has been reported on through newspapers, magazines, booklets, and in public addresses by experts drawing upon all shades of experience. The following presentation of data has been prepared by the Trade Development Bureau of Moore-McCormack Lines not as a review of that subject but rather in response to numerous requests received from United States exporters and consignees abroad who are interested in sound packaging techniques.

Because of many factors, steamship lines cannot readily *require* or *enforce* proper packaging or marking of export containers as rigorously as they would like. The responsibility for adequate packing rests finally with the shipper of the goods. This fact is clearly set forth in "The United States Carriage of Goods By Sea Act of 1936" which states:

Sec. 4 (2) "Neither the carrier nor the ship shall be responsible for loss or damage rising or resulting from insufficiency of packing."

It also states:

Sec. 3 (2) "The carrier shall properly and carefully load, handle, stow, carry, keep, care for, and discharge goods carried."

Losses through breakage, pilferage and theft, which are classified as "preventable," materially exceed those losses caused by "major" maritime casualties which include fires, sinkings, and collision of vessels. The following analysis therefore will deal with the problem of avoiding "preventable" losses. Its contents have been assembled from many reliable sources and deal with a variety of the difficulties that beset operators in all trades.

It is obvious that the best machine in the world has no value to its recipient if its parts are broken when the shipment arrives at destination. Sound, saleable, and adequately packed and marked materials mean a good outturn from the ship at destination.

Classification of "Preventable" Losses

The "preventable" losses can be classified in eight specific categories, viz.: Pilferage, Non-Delivery, Water Damage, Corrosion, Hook Damage, Breakage, Leakage, and Slackage.

In the following paragraphs are listed some of the causes of the losses in these categories.

Pilferage in most cases can be attributed to the use of frail, secondhand cartons or cases or other inadequate containers; use of green lumber for outside containers; failure to protect removable parts; use of open crates; lack of banding and other pilferage-prevention devices.

Leakage is caused by poor outer containers which do not protect the contents; lack of interior cushioning; inadequate handling marks; over-packing; insufficient ullage, and improper sealing of inner container.

Slackage can be attributed in many cases directly to the over-loading of the container (particularly bags) and the use of the wrong type of container for overseas shipments, also the use of re-used bags and paper bags and to poor sewing.

Corrosion results from failure to use preservatives and improper lining of the container.

Water Damage in many cases results from exposure in open storage and the failure to use waterproof liners.

Breakage can be attributed to lack of interior bracing and reinforcements, failure to disassemble breakable parts, and the use of frail or otherwise improper packaging.

Hook Damage caused by freight handlers is, in many cases, caused by the lack of proper cautionary marks (for example "Don't Use Hooks"). Heavy bags and bales should be provided with ears for handlers to grip.

Non-Delivery and *Pilferage* usually work hand-in-hand. Containers which are small and not marked "For Special Stowage" are susceptible to pilferage. Poor and illegible markings often result in short-delivery or delivery at the wrong port. Advertisements in connection with the contents displayed on the container very often invite pilferage.

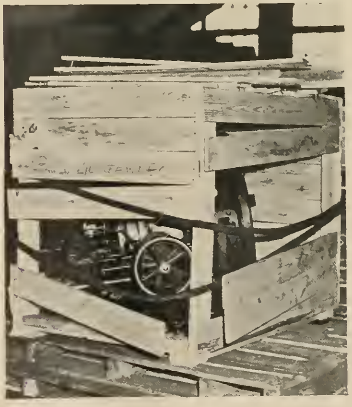
Rules for a Better Export Package

1. Domestic-type corrugated cartons should never be used for export. Solid fiber board containers should be utilized instead.

2. All cases, cartons, and crates should be steel-strapped or wired with staples.

EVERYTHING IS WRONG WITH THIS ONE

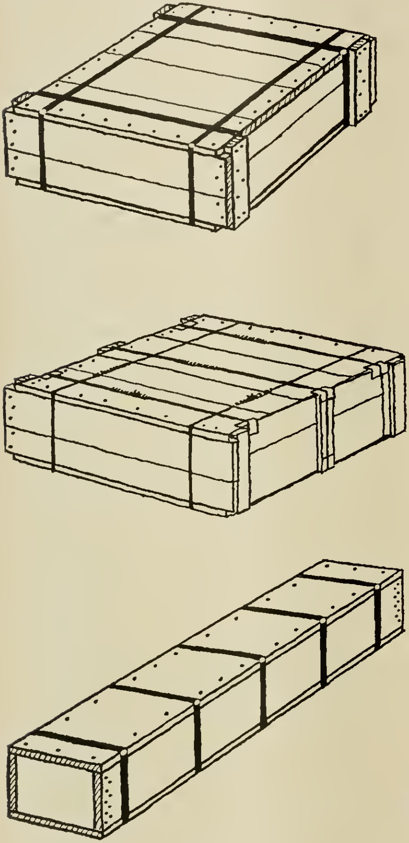
1. The machine was not secured to the bottom of the case; 2. Due to concentrated weight, the wrong type of cleat was used; 3. Green and salvaged lumber was used, secured with nails which were too short; 4. Lack of braces and diagonals was another cause of the case collapsing.



3. Wherever possible, use new wooden cases properly lined and filled completely, but not overloaded.

4. The use of separators or special wrappings is highly recommended for interior packing.

5. Do not use secondhand boxes or green lumber in new cases.



STRAPPING

Flat metal straps or bands and wire are the two types of metal bindings used on packing boxes. The three boxes shown above will provide a general idea of the methods used in applying these bindings. Both the steel band and the wire are made in different sizes. The size of band or wire used should be determined by the gross weight of the case.

Metal straps or wires placed around a wire-bound box lengthwise afford additional reinforcement of the ends and cleats, if needed. They assist in preventing the pulling out of staples, and reinforce the ends and cleats against breakage across the grain. Metal straps or wires applied in this way are also of great value in discouraging and minimizing pilfering.

The wooden barrel shown is well fitted to protect many types of products. Barrels are sturdy and dependable. A barrel is strengthened when filled because the internal pressure against the walls and external pressure of the hoops force the staves solidly against each other.

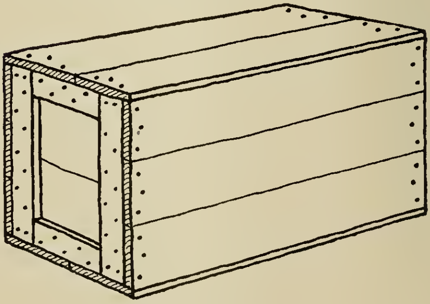
Packing Your Product

Every type and class of commodity has its own peculiar problem in relation to the container used. While time and space would not permit classifying every exportable product and its recommended container, the following products are representative in a limited commodity group.

Canned Goods are subject to damage as a result of shock, humidity, temperature changes, rust, and loosening of labels. Shipments should be made in wooden boxes properly strapped or heavy fiber containers thoroughly stapled.

Chemicals are classified in a wide variety of groups and in most cases are affected by climatic conditions. If the chemical is hazardous, it is subject to government and carrier regulations. The bulk-lot chemicals usually

The box shown below is particularly designed for heavy loads. It has double-cleated ends which are reinforced against splitting. It also allows for double nailing of all sides.



CRATING

The best way to protect goods packed in cartons is to crate them. This is a good example of a well-constructed crate.

The effect of a beautifully constructed crate can be lost if the contents are unprotected. The above crate contains a white enameled gas range with a clock, within easy reach of a pilferer's hand.

shipped are packed in strongly lined cases, barrels, drums, and boxed carboys.

Textiles are highly vulnerable to pilferage and deterioration and therefore require a substantial type of container. The most reliable type of container is the strapped wooden case lined with heavy manila paper. Certain types of plywood cases are also acceptable. Textiles baled and thoroughly strapped in heavy paper and burlap should be limited to those countries where the duty is based on gross weight.

Glass Products under present conditions are more than ever subject to breakage and pilferage and therefore require special attention in packing. The two types of containers most commonly used are wooden barrels and heavy fiberboard cartons. In both cases, the use of sufficient separators and excelsior or other packing is imperative to eliminate shock. If cartons are used they should be stapled or sealed with water-proof glue.

Paints and Varnishes should be packed in wooden cases and strapped. Where the larger paint pails are used, two such pails should be packed in a well constructed crate.

Machinery packed for export requires careful study because of the productive value usually associated with its end-use. Since precautionary measures must be taken in constructing the container, this item should be calculated when the original price is quoted. The container

Guide of cautionary marks referred to on page 47.

CAUTIONARY MARKS *IN SEVEN LANGUAGES*

ENGLISH	SPANISH	PORTUGUESE	SWEDISH	NORWEGIAN	DANISH	FINNISH
HANDLE WITH CARE	*Manéjese con cuidado*	*Tratar cam cuidado*	*Varsamt*	*Farsiktig*	*Forsigtig*	*Varavasti*
GLASS	*Vidrio*	*Vidro*	*Glas*	*Glass*	*Glas*	*Lasia*
USE NO HOOKS	*No se usen ganchos*	*Não empregue ganchas*	*Begagna inga krokar*	*Bruk ikke kroker*	*Anvend ikke krage*	*Alä käytä kaukkuja*
THIS SIDE UP	*Este lado arriba*	*Este lado para cima*	*Denna sida upp*	*Denne side app*	*Denne side apad*	*Tämä puali yläspäin*
FRAGILE	*Frágil*	*Frágil*	*Omtåligt*	*Farsiktig glass*	*Fragile (Or) Skrøbeligt*	*Särkyvää*
KEEP IN COOL PLACE	*Manténgase en lugar fresca*	*Deve ser guardada em lugar fresca*	*Förvaras kallt*	*Oppbevares på kaldt sted*	*Bør apbevares på et køligt sted*	*Säilytettävä viileässä paikassa*
KEEP DRY	*Manténgase seco*	*Nãa deve ser humedecida*	*Förvaras torrt*	*Oppbevares på tärt sted*	*Bør apbevares på et tørt sted*	*Pidä kuivana*
OPEN HERE	*Abrase aqui*	*Abra aqui*	*Öppnas här*	*Åpnes her*	*Åbnes her*	*Avataan tästä*

should be designed to utilize the least possible cubic content, but at the same time, be strong enough to withstand numerous handlings. Protective coatings or heavy paper should be used as a precaution against rust.

Novelty Items, Radios, Etc. should be exported preferably in wooden cases with corrugated cardboard lining. The case should be strapped and so far as is possible secured against pilferage.

Packing in Crates

Crates built to carry heavy machinery are usually provided with skids to reinforce the bottom edge and facilitate handling.

Special precautions should be taken in preparing shipments by crates. All detachable parts should be removed and packed in boxes. Movable parts should be secured to avoid sliding. Bolts, nuts, and washers should be packed separately.

There has been a certain amount of standardization applied in the construction of boxes. This in not true about crates since there are about as many types of crates used as there are commodities. Shipments made in unsheathed crates with open spaces between the frames and braces should have, if possible, an inner protection of kraft paper, burlap and waterproof paper to protect the contents against moisture damage.

Wooden crates are often used to carry a number of corrugated or solid fibre cartons. These cartons are bound with either wire or steel straps. The crates not only serve to hold a number of small units together, which facilitates handling and stowing, but also provide the rigidity which the cartons lack.

Export Marking

It is a strange coincidence that while the handlers of cargo often claim they cannot read the English cautionary marks placed on containers, packages become susceptible to pilferage the moment such containers describe the con-

STOWING

Cases, crates and barrels for shipment to overseas destinations should be constructed to withstand the pressure, the stress and the strain of a ship which might encounter hurricane weather.

FORK LIFTS

Modern facilities to expedite and protect your export shipments: a fork lift truck delivering palletized cases for loading in a steel shipping container. Valuable merchandise shipped in a sealed container and handled as a unit is protected from pilferage, and the hazards of breakage are greatly reduced.

tents of the package and boldly advertise the name of the manufacturer. The export container should, if possible, avoid the use of the manufacturer's name and a description of the contents. Many shippers have found it desirable to change the consignee's identifying marks periodically.

The cautionary marks with respect to handling should be stenciled on the container in English and the language of the country of destination. A guide with the cautionary marks in English, Spanish, Portuguese, Swedish, Norwegian, Danish and Finnish is provided on these pages.

Shipping marks and numbers should be stenciled carefully because containers marked improperly can be lost or delayed in delivery. The identifying marks of the consignee and the destination of the shipment should be placed on the most prominent part of the container.

Marks and numbers not specifically required to identify the shipment or its destination should not be used since they tend to confuse freight handlers. If too many names and addresses are placed on the containers, they cause delay and disorder in handling.

It is recommended that all marks be stenciled on the container with stencil ink or paint. Letters and figures should be at least two inches high and larger depending on the size of the case. Larger letters and marks are preferable.

As a final precaution, it is well to enclose a packing list with all shipments.

Steel Shipping Containers

Moore-McCormack Lines has recently added to its equipment a number of steel cargo-containers for experimental use in its various services. These containers protect small parcels and lessen the risk of pilferage and breakage from the time the container is sealed until it is opened again, especially during the long overseas voyages.

The welded containers are built of heavy corrugated sheet steel and mounted on skids. Double doors, made of the same material as the sides, provide easy access to the interior of the container.

The normal carrying capacity of a container is 12,000 pounds or 276 cubic feet. A representative cross section of the type of cargo carried in the containers includes perfumes, toys, drugs, pharmaceuticals, glassware, phonograph records, soap, notions, tobacco, X-ray tubes, canned goods, and alcoholic beverages.

The chief advantage of the container is that it permits the shipper to load and seal it and his consignee to open and discharge it at destination. Insurance underwriters are becoming more and more interested in the movement of cargo in containers and one has already reduced its base rate for goods shipped in this manner.

The small container in which the goods are packed should be marked and packed properly; otherwise damage, pilferage, and short deliveries may result after the goods are discharged from the container.

Cargo Damage Prevention

Moore-McCormack Lines was among the first in the shipping industry to interest itself in improved packaging and cargo claim prevention. A separate department was created for the purpose of promoting safety and cargo claim prevention. The objectives of this department are to assist manufacturers, packers and shippers in developing containers capable of withstanding long haul transportation, inland movement, the rigors of ocean voyage and the numerous handlings from ports of origin to overseas destinations. The personnel of the department includes four licensed ship masters experienced in cargo handling and transportation and a staff of men trained in this work. In addition to servicing shippers in better methods of packing, this staff supervises and assists both ship and shore personnel in proper methods of loading and stowage.

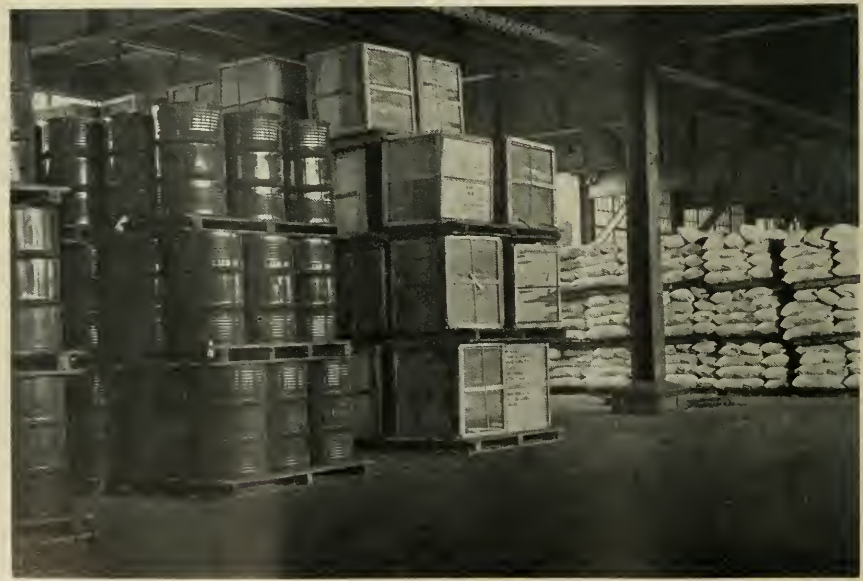
Trade Development Bureau

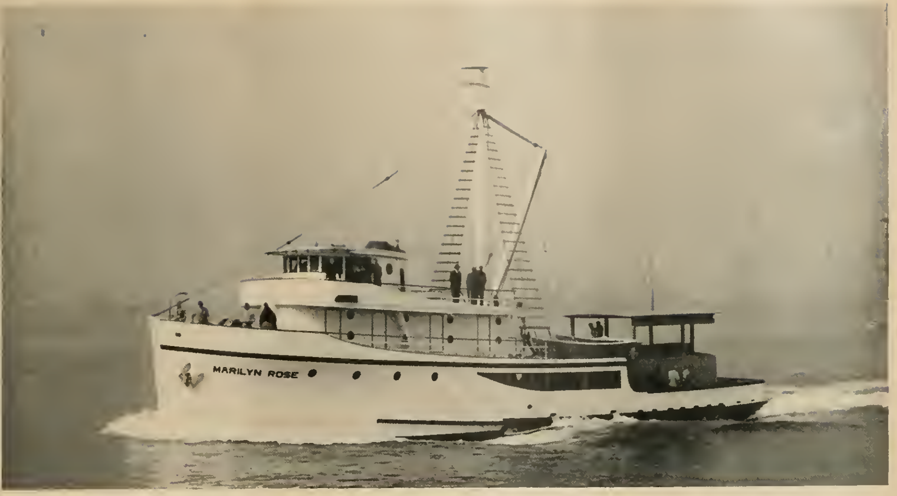
Moore-McCormack Lines has always been interested in the development of foreign trade, for several reasons. The first of these is, frankly, that as ship operators they are interested in the growth of commerce between the United States and the nations served by their ships, in Latin America and Scandinavia. Trade frequently has not developed because suppliers have not been brought into contact with markets, or potential importers have not learned of the sources of the goods they need. To discover goods and markets and to help bring them together has long been the objective of Moore-McCormack.

In order to achieve this goal and also to keep abreast of the everchanging foreign and domestic picture and, in order to render every type of assistance within the purview of a modern shipping operation wherever possible, Moore-McCormack maintains a Trade Development Bureau. This department is responsible for helping exporters, importers, manufacturers, and agents in the United States and abroad in finding new sources of supply or outlets for their products. They take no part in price negotiations nor conditions of sale since the sole purpose of this service is to stimulate trade. If you have a problem, tell them about it. If they don't know the answer, they will try to get it for you.

PALLETIZING

Below is an example of palletizing, a technique that reduces possibility of breakage, expedites movement of cargo to and from the ship and reduces costs of pier operation, all of which is beneficial to the shipper.





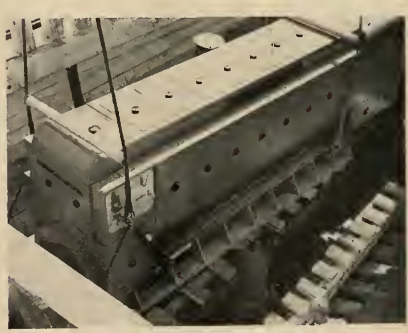
The "Marilyn Rose" on her trial run.

"Marilyn Rose"—Newest Tuna Clipper

THE recently completed tuna clipper *Marilyn Rose* has been welcomed as the newest addition to the tuna fleet and is now on her first voyage fishing off the coast of Southern California. Builders of the tuna clipper were the Long Beach Marine Repair Company under the man-

Left: Showing the compact engine room with the big Fairbanks Morse engine.

Below: Fairbanks Morse engine being lowered into the vessel.



The "Marilyn Rose" just before launching.

agement and guidance of the partners, Frank L. Munsuy, David F. Maxwell and George A. Robinson. Tony Brown is Skipper of the vessel, and his Chief Engineer is Herbert Allen.

The *Marilyn Rose* is a rugged, well built vessel of 100 feet overall length, 25′-0″ beam and 11′-8″ depth, and has a capacity of 177 tons. It is of the triple deck type, with main deck, raised deck and bridge deck, with thirteen fish holds, including three bait boxes on deck, two steel combination fuel and bait well wing tanks, and four port and four starboard wood bait wells, all below deck. The culinary water is carried in two steel tanks, located forward of the wing fuel tanks and have a capacity of approximately 2,019 gallons. The fuel capacity is approximately 19,142 gallons and its storage consists of one bow and two stern tanks; and the forward combination bait well and fuel wing tanks.

The main deck consists of combination galley, mess room, refrigerator, toilet room, boatswain's stores, and the upper engine room, containing engineers' tools, work bench and refrigeration units. The ship's meat box is located aft, starboard side of engine room, with galley entrancse The raised deck contains accommodations for the Captain, Engineer and a crew of twelve, radio room, chapel, gear lockers, net room and exhaust casing. Atop this is located the pilot house and chart room.

The heart of this beautiful and efficient vessel, of course, is its power plant. The propulsion engine consists of a 480 h.p. Model 31A8½, 4 cylinder, 8½″ bore, 11½″ stroke, 525 R.P.M., Fairbanks, Morse & Co. two cycle, heavy duty, direct reversing marine engine, equipped with 2 to 1 reduction gear. The engine drives a 77″ diameter, 60″ pitch, 3 blade, bronze Doran propeller through the intermediate and monel tail shaft. The propulsion engine is smooth in operation, practically free from vibration and trim in appearance.

All pumping equipment along with its electric motors were supplied by Fairbanks, Morse & Co. and consist of two 8″ bait water pumps, ten 3″ brine circulating pumps, one fresh water pressure system, one salt water pressure system, one 1¼″ fuel oil transfer pump, one 2″ fire and washdown pump, one 3″ ice machine circulating pump and one 3″ bilge pump.

The cargo refrigeration system consists of three 5″ x 5″ Worthington ammonia compressors driven by 25 H.P. high torque motors and a 3″ x 3″ compressor is provided for the galley refrigeration. The condensing system is of the submerged type, equipped with two receivers, and water for the system is provided from bait line system with cross connection to condenser service pump.

The pilot house, attractively mahogany trimmed, is completely equipped with ship-to-ship and ship-to-shore radio, fathometer, engine room controls, chart room and navigation equipment. Deck equipment consists of one 450 pound and one 750 pound stockless anchor, anchor winch, cargo and boom hoist, 18′ tuna tender powered with 110 H.P. Chrysler engine, 19′ large skiff and 12′ small work boat.

The *Marilyn Rose* is an outstanding example of the "Baby Clipper" type vessel. The operation will be watched with interest because of the divergence of opinion regarding the most efficient tuna clipper size.

Free Safety Inspection For Boat Owners

As in previous years, owners of pleasure boats may obtain free safety inspections of their craft by the Coast Guard Auxiliary. They may apply for inspection to any of the Auxiliary flotillas in their District.

The inspection will be divided into two separate parts. The first part will consist of a thorough inspection of, and for, all the items required by law. One, and only one, form will be used by the inspector as a check-off sheet. Upon completion of the inspection, this form will be presented to the boat owner whether or not he is complying with all requirements of the law. This is

(Continued on page 51)

Todd's L. A. Yard Builds Tugs for South America

Shallow draft river tugs recently completed by the Los Angeles Division of Todd Shipyards Corp.

THE construction of three shallow draft river tugs has been completed by the Los Angeles Division of Todd Shipyards Corporation for the account of the Korody Marine Corporation. These represent part of a contract for five vessels. The tugs were designed by the Korody Marine Corporation, Long Beach, California, known for its pioneer work in the development of craft for inland river transportation requirements, and will be shipped to South America to operate on rivers and inlets heretofore unapproachable by conventional tugboats.

The principal features of these tugs are short length, extreme maneuverability and rugged steel construction, which permits their utilization in narrow and obstructed waterways.

Each tug is powered for heavy duty with an electric-starting 200 HP Venn-Severin HCV, 8 cylinder, 600 RPM, two cycle Diesel engine, built by the Venn-Severin Machine Co., Chicago, and equipped with a Joes reverse gear. This engine turns a three-bladed 32″ diameter propeller. The engine is fully controlled from the pilot house, and the helmsman has complete control of operation from that point. The hull is divided into five water tight compartments with the bottom, sides, deck and bulkheads finished with $\frac{3}{16}$″ plating. Transverse frames are spaced on 30″ centers and the deck beams are constructed with 4″ angles. Each tug is 30′ 1⅝″ long, 10′ 6″ beam with a depth of 4′ 6″ and has a loaded displacement of 16 tons.

The pilot house is constructed of marine plywood, fitted with sliding doors, port and starboard, and glass drop sash windows. An access door to the engine room is fitted into the after bulkhead. A watertight bolted hatch is fitted on the engine room casing for removing the engine for future repairs. Provision for heat dissipation is by means of electric fans, cowls and louvers installed in the engine room coaming. A double towing bitt and guide fabricated from extra heavy pipe is installed on the stern.

Each tug has high frequency two-way radio equipment with an approximate range of 1000 miles.

These vessels are fully insulated for tropical service and have been constructed in accordance with the latest marine practice. The excellence of the work is noticable throughout in their attractive, streamlined appearance. Due to their compactness, the tugs can be transported without difficulty at low cost by steamship.

Free Safety Inspection For Boat Owners

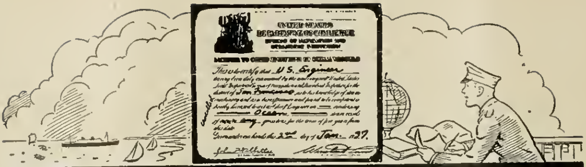
(Continued from page 50)

to assure the boat owner that he will not be reported for any deficiencies noted.

The second part of the inspection will be general. It will also cover the equipment which the Auxiliary considers desirable but which is not required by law. This inspection includes ground tackle, ropes and wire, steering gear, carburetor drip pan, first aid kit, hull, publications and any other equipment which may affect the safety of the vessel or those on board. As in the other part of the inspection, only one check-off list will be used and presented to the owner.

All boats meeting minimum legal requirements for safety will receive the Auxiliary's red-white-and-blue inspection sticker. The sticker is recognized by the Coast Guard, and boats displaying it will be spared the inconvenience during the 1950 season of being boarded for routine inspections by cutter crews.

Owners of boats which fail to pass the Auxiliary's courtesy inspection will be given opportunity for re-examination if they remedy the shortcomings in their craft.



Your Problems Answered

by "The Chief"

"The Chief's" department welcomes questions—Just write "The Chief," Pacific Marine Review.

Ship Vibrations

The weather was calm, almost too calm, following a storm of major severity. The S.S. *Marine Reviewer* had come through without a scar. They were homeward bound from a string of Pacific and Island ports of call. It was a little after 0930 and the Bingo game had started in the main salon. The Second Assistant Engineer William (Bill) Clark had finished a late dinner and was in the stateroom and office of Frank Farran the Chief Engineer .They were discussing the effects of the storm on the ship.

"Frank," Bill was saying. "I wish I knew more about ship vibration. I know that vibration can crack steel plates and do a lot of other damage. This ship would raise her bow out of the sea and then shake it like a dog with a rat in its mouth. Then it would squash down in the water with a thud and take green seas over the bow. I spent some time up in the bow in and around the for'castle and down in the chain locker. I could hear the propeller coming in and out of the water clear up in the bows."

"Yes, Bill," Frank replied. "There are a lot of Naval Architects who would like a lot of factual information about ship's vibration. They know a lot now but not enough by any means. It is a big subject. What interests you?"

"Well, for instance the ship seems to vibrate in this calm sea and we are running faster than during the storm." Bill was puzzled. "I notice that when we are making 110 turns on the propeller that the truck lights vibrate badly but that when we speed up to 115 turns this vibration stops but the cargo boom on the after hatch vibrates back and forth like a harp string."

"That's it, Bill, a harp string. If a thing, any thing, is free to move in any direction, and if it has any inclination to restore itself if moved out of its normal position, it is a possible vibrator. If it is free to move, but like a chair on the deck has no definite force or spring effect to restore it to the original position, then it is not a vibrator. All things have mass or weight and therefore we may say that a vibrator must have these characteristics: (a) some degree of freedom of movement if forced out of a normal position; (b) more or less mass or weight; (c) and a spring effect which always attempts to restore it to the normal position. The steel structure of the ship conforms to all of these requirements. The steel yields under the force involved and acts like a spring. It is almost a perfect spring as long as we do not force it beyond its elastic limit and cause it to deform permanently. The steel has weight or mass to say nothing of the tremendous mass fastened to it in the form of the superstructure and fittings of the ship. Thus, to make a vibrator out of the ship we need only the force to push it out of its normal position and then to withdraw that force so that it springs back into a vibration. There are many intermittent forces on the ship and, more important, there are many periodic recurring forces which come and go regularly and may be in step with the natural rate of vibration of some part of the ship. If this is the case we have a violent vibration like the truck lights or the cargo boom."

"Gosh, that's a long speech Frank. Wait 'til I get it all."

Mac McCoy, the First Assistant Engineer and George Cambell, the Third Assistant Engineer, came into the office and took chairs without saying a word. Farran continued.

"A pendulum is a perfect example and the force of gravity is the spring effect that restores it. In general the frequency of oscillation of a vibrating system in complete cycles per second with suspension like a pendulum is the length of the pendulum from center of support to center of gravity of the moving system in feet divided by the quantity 2π times the square root of .031. This .031 is 1 divided by the gravity constant 32.2. This figures about one cycle per second for a yard long pendulum, and is the basis for all pendulum clocks' time characteristics. If the spring effect of a spiral spring is balanced against the oscillating weight of a flywheel, we have the timing element of a watch."

"Wait now, Frank." McCoy was speaking. "How about the parrot in the bird cage hanging on a long spring. He bounces up and down, too, you know."

"Yes, Mac, and that makes a very interesting form of vibration. If a body hangs by its own weight on a spring like a bird cage or a fish scale the weight oscillates up and down at a uniform periodic rate in which the complete cycles per second are: 1 divided by 2π times the square root of D over 32.2. This is the fraction .9 over the square root of D. And D is the distance in feet that the spring deflects or elongates when the weight is added to the spring."

He continued. "The general rule is:

$$\text{frequency equals } \frac{\text{a constant or number}}{\text{square root of } \sqrt{\dfrac{\text{mass}}{\text{spring effect}}}}$$

This means that the bigger the mass the lower the frequency or slower it oscillates, and the bigger the spring effect the faster it oscillates and the higher the frequency. If the cargo boom figures out to vibrate at 2 cycles per second due to its stiffness and mass, then when fed by a slight disturbance such as the ship's shaft turning over at 120 revolutions per minute it will oscillate; but when fed with other frequencies even of much larger force it will only move slightly at the disturbance, then stop. If the disturbing force is regular and periodic but at a frequency near 120 per minute such as 110 or 130 per minute then the boom will oscillate at 120 for a few cycles, then stop, then oscillate and continue on in step, then out of step again, a sort of pulsing action. You have all seen this intermittent vibration. It is due to the force frequency being a little, but not too much, different from the natural frequency at which the mass wants naturally to vibrate. The natural frequency at which it oscillates easily is called the natural critical. You engineers cannot walk over the ship for ten minutes without seeing at least one example of this, some part merrily buzzing, vibrating or moving regularly in step with some force frequency of the ship. Hand rails, pipe supports, brackets, pots in the galley, lamp shades, bulkheads, masts, booms, brace lines, and so on." Frank turned to sip his coffee.

"Yes, I see this all the time, but what causes all these things to move?" Bill Clark was only half serious as he knew that it all came from either the ship's engines or the sea.

Farran looked up and continued. "We must visualize forces in matter, in bodies and in ships. If these forces are periodic and regular they will set into vibration any mass which is affected by the force and whose critical is near or at the frequency of the force. Even if the force frequency is half of, or twice the critical, the body will oscillate. If you had a child in a swing you could push him every cycle, or skip one and push, or could push and pull. And so on. The only requirement is the regularity. This illustrates the vibration induced by the ship's machinery below decks or the ventilation sets and so on above decks. Also, you could give the child a big push only once and he would swing quite a while at the same rate as before. This illlustrates the vibrations of the ship and parts as caused by the sea, wind and wave. Strong but irregular pushes. Now combine all these forces in the ship's structure, regularly and irregularly adding and subtracting from each other chasing back and forth from stem to stern and we have a sort of gigantic orchestra, some parts in tune, most parts out of tune."

Frank caught the night steward's eye as he was passing the open door. He asked for more coffee and cups for his guests, and continued.

"I can see McCoy's next question coming up. Yes, there are things that can be done to reduce this noise but not to stop it altogether. You will notice that in the original statement of the general condition for vibration nothing was said about a condition where there would be no vibration. And this is true. But knowing that mass reduces, and spring effect increases the frequency, it is possible to have such a high frequency that the force frequency will never reach it; this is what we do when we stiffen a part to stop vibration. We only raised its natural frequency. We can also loosen it up or weaken its spring effect to lower its natural frequency to below the ship's force rate. These two changes were made on the spring effect. We can work on the mass also. We can lighten or reduce the weight of the part. This raises frequency, and we can add weight to the moving part which will reduce the frequency rate. So while we cannot ramove the tendency to vibrate, we can tune it out of the force range. It all boils down to tuning just like the radio operator does on his radio sets. We cannot take the force frequencies out of the system but we can tune the several parts so that they will not resonate or fall into step with them.

Now with the cargo boom, we cannot change the weight or spring effect but we can change the degree of freedom of movement through which this weight and spring effect work. For instance, we can run a strong brace from the deck up to the horizontal boom and carry some weight on this vertical brace. Let it contact the boom, say 5 or 7 feet away from either end support. This will increase its natural or critical period and it will no longer vibrate from the force frequency induced by the engines. It is the same as the bull fiddle player. He runs his finger down on the string when he wants a higher note than the natural of that string. So you see, if the mast or truck vibrates at some ship's speed we may tune it out by tightening the lines or by loosening them. You can get into a fine argument with the mates on that one. Also we can stop the vibration by adding a weight to the truck lamp or by reducing the weight. Notice that in changing the weight we must not correspondingly change the strength, or spring effect, unless we go in opposite directions because the frequency is proportional to the square root of the ratio

$$\frac{\text{spring effect}}{\text{weight}},$$

and if we increase both we have no change. Remember that the degree of freedom of movement is a factor and the length of vibrators can be changed. But that's enough for tonight. Bill, I want you to take a shot at taking the vibration out of the throttle valve handle on the outboard auxiliary generator tomorrow. We will discuss vibrations in the engine room next time."

With the Port Engineers . . .

At the May meeting of the San Francisco Society. Top, left to right: M. J. Garlinger, MSTS, Chairman of the Board of Governors and Chairman of the Program Committee; Phil Thearle, Chief Engineer, Todd Shipyards; Jack Butler, Gamlen Chemical Co.; Joseph Zuboff, MSTS; Judge Clarence Morris. In background is R. N. Parkin, Westinghouse.

Bottom, left to right: A. G. Lacy, Amercoat Corp.; Henry Cave, Keystone Shipping Co.; H. D. Williams, Keystone Shipping Co.; Eddie Martin of W. Edgar Martin Co., Amercoat distributor.

May Meeting Of San Francisco Society

The May meeting of the San Francisco Port Engineers Society brought the report from President Ira Chapman that in the April business meeting associate members had been given full voting privileges in the Society and may elect two associate members to the Board of Governors; also that Marshall T. J. Garlinger had been elected Chairman of the Board of Governors.

The membership having been notified of a proposal to reconsider the monthly meeting night, voted to continue meeting on the first Wednesday night of the month.

Diesel Meeting For San Francisco Society

Diesel engines will be the theme of the next program at the June 7th meeting of the Port Engineers' Society of San Francisco. The program will be under the direction of George Lienhard, Sales and Service Engineer for the Nordberg Manufacturing Co.

Questionnaires are being sent out to all of the Port Engineers requesting that they return these to Lienhard so that he may build a program around the Diesel engine problems which concern the individual Port Engineers. This will be a departure from the usual prepared talks, and an effort will be made to discuss those things which vitally interest the individual members.

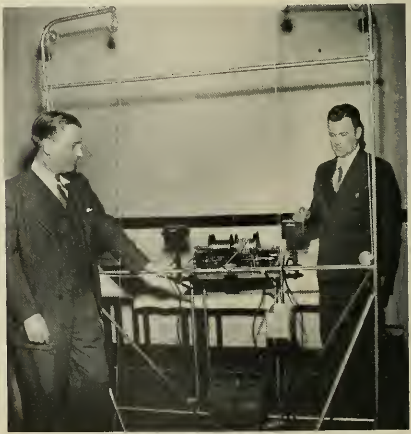
Lienhard hopes to have several persons to assist him at this meeting who are experienced in piston rings, lubricants, fuels and various types of Diesel engines. He will present some facts and figures concerning the operation of motorships which will indicate their reliability and economy as compared to other means of propulsion. This should be one of the most unusual and most interesting meetings of the year.

Gigy Demonstrates Magie Winch

In a well attended meeting of the San Francisco Port Engineers Society, May 3, Merrill Gigy demonstrated the Lake Shore Magie Winch with the aid of a miniature which was specially shipped from the Lake Shore Engineering Company's Iron Mountain factory for the purpose.

At the October meeting of the Long Beach Society, Gigy conducted an ingenious discussion of the winch (and also Lake Shore's Siporter) as part of a talk on progress in material handling. The discussion of the operation of the Magie Winch was published in the November *Pacific Marine Review*. Photographs on this page show the miniature.

Merrill Gigy and Vern Keays of M. J. Gigy Associates, demonstrating the model Magie Winch at the Port Engineers' meeting. The complete flexibility of the Winch was evident.



Pacific
WORLD
TRADE
Reg. U. S. Pat. Off.

Control Regulations In Principal Foreign Countries

(Revised as of Jan. 20, 1950)

Prepared by the
Office of International Trade
Department of Commerce

In many countries foreign goods may not be imported unless covered by an import license which must be obtained by the importer and in certain cases must have been granted before the order for the goods has been placed. Also in many countries, owing to the extreme scarcity of dollar exchange, the authorities require that an exchange permit be obtained before the goods may be paid for. Before shipping his goods, the exporter should make certain that the importer has obtained these permits, if required. He should insist on being informed as to the identifying number or symbol of the document.

The following tabulation of the import and exchange permits required in foreign countries has been prepared as a general guide to exporters. These regulations apply primarily to goods of United States origin and/or payable in United States dollars. Necessary detailed information may be obtained by writing the Areas Division, Office of International Trade of the Department of Commerce.

Country	Is import license necessary?	Is exchange permit required?
Afghanistan	Yes	Yes.
Anglo-Egyptian Sudan	Yes	Yes.
Arabian peninsula areas:		
Saudi Arabia	Yes; on almost all commodities.	Yes.
Aden, Bahrein, Qatar, Trucial Oman.	Yes	Yes.
Kuwait, Muscat and Oman, Yemen.	No	No.
Argentina	No; except for a few commodities.[1] Certain products are subject to import quota.	Yes; for all imports; granted only for "listed" products. Application should be filed prior to confirmation of purchase order.
Australia	Yes	Import license carries right to foreign exchange.
Austria	Yes; except for a small number of commodities.	Yes; approval by Foreign Trade Commission is pre-requisite for foreign exchange permit.

Japanese Trade Agency Established in San Francisco

Japan's first governmental representation in the United States since Pearl Harbor Day was established recently in San Francisco.

Culminating more than two years' effort by the Chamber of Commerce to secure trade representation by Japanese officials, a four-person group arrived in San Francisco May 4 to set up a Japanese Overseas Agency. Its purposes will be to promote trade between Japan and the United States and to handle citizenship and property problems relating to Japanese nationals residing in this country.

Similar Japanese offices will be opened shortly in Los Angeles, Seattle, New York and Honolulu. They represent the closest thing to Japanese consular offices, which are not possible since Japan has no diplomatic status until a peace treaty is signed.

Chief purpose of the San Francisco agency is to permit Japan, which is unusually dependent on foreign trade, to conduct research on market conditions and opportunities in the United States. It will also make available, to business men in the area, information on trade opportunities in Japan and on Japanese laws and regulations concerning the import and export of goods.

Belgium-Luxembourg	Yes; except for a large group of commodities that may be imported with "declaration in lieu of license."	Yes.
Belgian Congo	Yes	Yes.
Boliva	Yes	No; import license authorizes purchase of exchange, but is not a guarantee that exchange will be granted.
Brazil	Yes; except for a few products. Dollar import permits issued only for specified essentials.[1]	Yes.[2]
British Colonies, not specified elsewhere.[3]	Yes	Yes; import license generally assures release of foreign exchange.
Bulgaria	Yes	Yes.
Burma	Yes	Yes.
Canada	Yes; for many products.[1]	Yes; but system is not restrictive for commodities not under control; for controlled commodities, import license carries right to foreign exchange.
Ceylon	Yes	Yes.
Chile	Yes; must be obtained prior to shipment of goods and copy must be sent to exporter.	Yes; in form of notation on import license.
China[1]	Yes	Yes; except for certain Government purchases.
Colombia	Yes	No; but import license necessary to obtain foreign exchange.
Costa Rica	No	Yes; foreign exchange is rationed.
Cuba	No	No.
Czechoslovakia	Yes	Import license automatically provides for allocation of necessary foreign exchange.
Denmark	Yes (with exceptions)	Yes. For goods subject to license, copy of license with customs certification of importation takes place of exchange license.
Dominican Republic	No	No; but all applications for foreign exchange require government approval which is granted almost automatically for bona fide commercial transactions.
Ecuador	Yes; must be presented in order to obtain the consular invoice. Some luxury imports prohibited.	Import license carries the right to foreign exchange (Central Bank of Ecuador).
Egypt	Yes; unlicensed imports are subject to confiscation.	Yes.
El Salvador	No	No.
Ethiopia	No; except on products subject to export license in country of origin.	Yes.
Finland	Yes	Yes; import license carries right to foreign exchange.
France	Yes; obtainable for "essentials" only.	Issued simultaneously with the import license.
French overseas territories not elsewhere specified.	Yes	Import license carries right to foreign exchange.
French Indochina	Yes	Import license carries right to foreign exchange.
Germany	Yes	No; granting of import license automatically provides for the allocation of foreign exchange.
Greece	Yes; license granted only for limited number of essential products.[1]	Yes; import permit carries right to open a letter of credit.
Guatemala	No	No.

Haiti	No	No.
Hashemite Jordan Kingdom	Yes	Yes.
Honduras	No	Yes.
Hong Kong	No; except for specified commodities in short supply or under international allocation.	No; except where an import license is necessary.
Hungary	Yes	Yes.

(This summary will be continued next month.)

Footnotes

1. American exporters may obtain information regarding the import controls on their products by writing the Areas Division or one of the field offices of the Department of Commerce.
2. All exchange transactions amounting to more than 20,000 cruzeiros require an exchange permit from the Banco do Brazil.
3. Includes Bermuda, British West Indies, British East and West Africa, British Guiana, British Honduras, Northern and Southern Rhodesia, and minor colonies, protectorates, and Trusteeship territories.
4. Refers to Chinese National Government regulations. At present, most Chinese ports are under communist control. Under the foreign exchange and trade controls announced early in June 1949, for communist-controlled areas, both a special import license and foreign exchange deposit certificate are required for all permitted imports.
5. The importer buys his dollar exchange on the basis of the daily free market rate.
6. Since March 1949 Newfoundland has been a Province of Canada.
7. Importers must conclude a contract for purchase of exchange with the Bank of Paraguay before purchasing abroad.
8. Copies of a memorandum entitled "Summary of Import Controls in the Union of South Africa" are available from the British Commonwealth Branch, Areas Division or the field offices of the Department of Commerce.

MARINE
INSURANCE
★
Cargo, Hulls, Motor Transit,
Parcel Post, Registered Mail
and other
Inland Marine Lines
★
☆ THE HOME ☆
Insurance Company
Home Office: 59 Maiden Lane, New York 8, N. Y.
SAN FRANCISCO — EXbrook 2-5600 — 565 Clay St.
LOS ANGELES — MIchigan 3661 — 639 S. Spring St.
MARINE MANAGERS
Clayton E. Roberts — Alberto Martinez, Jr.

Pabco's E. T. Forrest In Port Engineers

E. T. Forrest, who has been connected with the Pabco Paint Division of The Paraffine Companies, Inc., for the last 26 years, was elected to an Associate Membership in the Society of Port Engineers at their April meeting.

Well known in Bay Area shipping circles, Ed Forrest, who was born and raised in the shadow of San Francisco's old Pacific Mail Dock, has long been associated with the marine paint business. Not only has he been a representative for Pabco Marine Paints nationally and on the West Coast for over a quarter century, but he also holds an ocean-going Marine Engineer's License. Both his father and grandfather were actively connected with the early San Francisco shipbuilding industry.

E. T. Forrest of The Paraffine Companies, Inc

Ship Classification Societies

(Continued from page 42)

authorized this Bureau to carry out certain surveys of vessels in Canadian Registry when in the United States.

Classification and Survey Procedure

(a) Building New Vessels:

The customary procedure when new vessels are to be built, and to receive classification, is to have the design drawings submitted to our technical staff for approval and for checking to see that same meet classification requirements. Approved copies of these plans, amended where required, are then returned to the Naval Architect or Builder and to our local office where the supervision of construction is carried on. These plans are the surveyor's guide during the construction of a new vessel. When the material is ordered at the steel mill or foundry, everything that is vital to the safety of the vessel is tested and inspected by surveyors for physical properties and soundness. This includes structural steel, as well as castings and forgings used throughout the vessel's hull and machinery. These test reports are turned in and copies forwarded to the surveyors in the yard of construction. During construction the surveyors supervise workmanship and test tanks and watertight structure to see that the vessel is built in accordance with classification standards and the best shipbuilding practice. After completion, trials and tests are conducted to prove the vessel in a good operating, safe, and seaworthy condition. When this has been done reports are submitted to our home office where they are studied by the technical staff before submission to the classification committee, and if approved the vessel is assigned classification.

(b) In the case of existing vessels:

After classed vessels are placed in service, certain surveys are carried out from time to time as considered necessary to insure that the vessel is maintained in a seaworthy manner and in a safe operating condition. It is customary to carry out annual surveys of hull, machinery and boilers, and inspect vessels annually on drydock. On these occasions an inspection is made of the vessel's underwater body, propeller, stern frame, rudder, sea valves, anchors, anchor chains, and in any other part of the ship any abnormal conditions are noted. At two or three year intervals, depending upon conditions, the propeller shafts are drawn for examination and every four years special surveys are conducted whereby thorough inspections are made of the entire vessel's hull and machinery. The results of all surveys are covered in reports, copies of which are sent to the owner and to the classification society files where a running record is kept of all classed vessels.

When a vessel encounters any damage which may jeopardize the safety of the vessel, classification surveys are called and recommendations made to replace the vessel in its originally good condition. Such damages may or may not need immediate attention and an owner may prefer that repairs be deferred. In such cases it is customary to issue a seaworthy certificate stating that in the surveyor's opinion the vessel is safe and in satisfactory condition to continue in operation for a limited or an indefinite period depending on conditions.

Why Do Shipowners Class Their Vessels?

One might well ask what particular advantage it is to a shipowner to maintain his vessels in class and why does he pay classification fees. There are several answers to this question.

1—The owner's interests require the hull, machinery and equipment be built and maintained to acceptable standards, such as those prescribed by a classification society, which are based on experience, and altered in the light of additional experience and technical development. These interests require a seaworthy ship.

2—In placing their confidence in a classification society rather than trying to do the job within their own organization, the owners are using the benefit of experience accumulated within the whole industry.

3—Certain insurance contracts, especially cargo insurance, may require the prerequisite of classification in a recognized society.

4—Other contracts regarding the vessel may require the same prerequisite.

5—Classification is often used by the owners to assist in showing due diligence.

6—With regard to above item "5," classification surveyors, especially in ports where the owners have no technical personnel, are called in by the Master or Agent in case of damage or trouble to determine the advisability or otherwise of making repairs, and to supervise such repairs if necessary, all with a view to making the vessel seaworthy.

From the foregoing it will be apparent that the subject of this paper is a broad one and one on which much more could be written. However, it is hoped that the paper will clarify some of the points in connection with classification and procedure.

In closing it might be pointed out that a Classification Certificate has been referred to as an owner's receipt, a shipbuilder's guarantee, an underwriter's protection, and a shipper's business guide!

Charter of Good Neighbor Fleet Extended; Replacement Plans Indicated

The Maritime Commission, on February 21, authorized the extension of the current charter contract with Moore-McCormack Lines, Inc., under which the Good Neighbor Fleet (S.S.s *Argentina, Brazil and Uruguay*) is operated, due to expire May 8, 1950, so as to permit scheduled sailings through October 31 of this year.

Pending before the Commission is a decision, following public hearings and oral arguments, as to whether an operating subsidy can be paid in the operation of the Good Neighbor Fleet on Trade Route 1, between New York and eastern South American ports, and whether construction-differential subsidies can be paid for building new passenger vessels for this service.

In its action extending the current charter, the Commission at the same time directed its staff, when and if it determined that the subsidy can be paid, to submit for approval an invitation for public bids for the charter and operation of the three vessels for the period between the termination date of the charter contract as extended, and the date on which it is estimated that this fleet can be replaced by new vessels.

Into the invitation to bid would be incorporated the requirement that each bidder submit a plan for the replacement of the three vessels, involving the construction by the bidder of the number and type of vessels suitable and adequate for operation on the Trade Route.

PACIFIC TRAFFIC ASSOCIATION'S "STEAMSHIP NIGHT"

The 27th annual Steamship Night of the Pacific Traffic Association filled the Palace Hotel ballroom as one of the most distinguished groups in the history of the "Night" attended. Chairman of the committee handling the affair was John R. Wagner, vice president and general manager of Pacific Far East Line.

Top, left to right: Cliff Buell, Assistant Freight Traffic Manager, Pope & Talbot; Richard A. McLaren, President, Pacific Transport Lines, Inc.; Admiral Frederick I. Entwistle, Deputy Commander, Western Sea Frontier; Donald Watson, General Manager, Weyerhaeuser Line.

Center, left to right: Lloyd C. Fleming, Pacific Coast Director, U. S. Maritime Commission; Rear Admiral J. E. Stika, USCG, Commander, 12th Coast Guard District; K. H. Finnesey, Vice President and General Manager for California, States Steamship Co.; Howard Middleton, Pacific Coast Manager, Funch, Edye & Co., Inc.; W. Dearborn Clark, Vice-President, American-Hawaiian Steamship Company.

Bottom, left to right: J. A. de la Pena, Pacific Coast Manager, States Marine Corp.; K. C. Tripp, Pacific Coast Manager, Moore-McCormack Lines, Inc.; R. W. Cabell, Vice President, Interocean Steamship Corp.; J. S. Blackett, General Manager, Williams, Dimond & Co.; Hugh Middleton, Assistant to President, General Steamship Corp., Ltd.; H. B. Perrin, Secretary, Matson Navigation Co.; D. N. Lillevand, Vice-President, Grace Line, Inc.; Cliff Buell, Assistant Freight Traffic Manager, Pope & Talbot; Admiral Frederick I. Entwistle, Deputy Commander, Western Sea Frontier.—Pacific Marine Review photos.

Top: Maj Gen. J. A. Lester, USA, Commanding General, Fort Mason; and John R. Wagner, Vice President and General Manager, Pacific Far East Line, Inc., who was chairman of the "Steamship Night" committee

Bottom: Oliver Vickery, President, Pacific Traffic Association who was toastmaster; Robert H. Wylie, Port Manager, Board of State Harbor Commissioners for Port of San Francisco; Capt. William R. Thayer, U. S. N., Deputy Commander, MSTS.

Below: Picture taken at a steamship dinner at the Palace Hotel, October 8, 1946. Left to right: Harry Thompson, George Williams and Robert E. Pyke.

MSTS SHIPS will henceforth be differentiated from other naval ships of the same classification by identifying prefix T before the class symbol; i.e., TAP, TAK, TAO, etc. Further to distinguish the three general categories which comprise the Military Sea Transportation Service, the symbol MSTS(M) will indicate merchant marine manned naval ships—such as the fifty-seven (57) former naval tankers; MSTS(G) will indicate civil service manned ships—such as the former Army transports; while MSTS alone will indicate commissioned vessels with naval crews—such as the former Naval Transportation Service ships.—From *Merchant Marine Naval Reserve Bulletin.*

Towing Tanks Discussed at March Meeting of Northern Calif. Section, N. A. M. E

A paper by Hugh W. MacDonald entitled "The Experimental Towing Tank at Stevens Institute of Technology" was presented at the March 30 meeting of the Northern California Section of The Society of Naval Architects and Marine Engineers, held at the Engineers Club, San Francisco. MacDonald is Executive Officer of the Experimental Towing Tank. A graduate of the Massachusetts Institute of Technology, he was at sea as a licensed engineer and worked for both shipyards and ship operators in addition to his work at the Towing Tank.

Pictures taken at the March meeting of the Northern California Section, The Society of Naval Architects & Marine Engineers, at which new officers were introduced.

Top, left to right: Emmet Jones, Bethlehem Shipbuilding (Secretary-Treasurer of Northern California Section); Hugh W. MacDonald, Executive Officer of the Experimental Towing Tank, Stevens Institute of Technology, who was speaker of the evening; Sewell A. Knapp, Moore Dry Dock Co. (new Chairman of the Section); George L. Crow, General Electric (Vice Chairman of the Section); C. M. Loring, Mare Island Naval Shipyard (member of the Executive Committee, term expiring 1953); William Warren, American Bureau of Shipping (past Chairman).

Bottom: Members applauding the speaker, Hugh W. MacDonald.

Honolulu Propeller Club Honors Admiral Coffin

Presented with a table service of Hawaiian woods by the shipping companies of Honolulu at the March 1 monthly meeting of the Propeller Club of the Port of Honolulu on the occasion of his retirement, Rear Admiral Eugene A. Coffin, Commander, 14th Coast Guard District, responded with a brief talk Commenting on the marine inspection and law enforcement duties of the Coast Guard, Admiral Coffin said that "cops" were not like by everyone and that he, as the head "maritime cop" of the 14th CG District, appreciated the cooperation of the shippers who had made his job easy. Left to right: Col. Wilbur S. Elliot, TC, U. S. Army; M. F. Cropley, Vice President, Matson Navigation Co.; Governor Ingram M. Stainback, Territory of Hawaii; Admiral Coffin; Harry L. Dawson, Theo. H. Davies & Co.; William Hodgins; Capt. W. F. Fitzgerald, USN, Chief of Staff, 14th Naval District.

At the head table but not shown were Warren S. Titus, President of the Honolulu Propeller Club, Howard B. Crites, 1st Vice President, and Ernest C. Gray, 2nd Vice-President.

Official U. S. Coast Guard Photo

J. W. Cantillion, Secretary of the Propeller Club of ie Port of Honolulu and retired Secretary of the Ameri- in Bureau of Shipping, reports on the retirement of ear Admiral Eugene A. Coffin, Commander of the ourteenth Coast Guard District, after 42 years of active uty with the Coast Guard.

The shipping companies of Hawaii joined with the ort of Honolulu Propeller Club at its monthly meeting nd said "Good luck and good sailing" but refused to ıy goodbye to the popular 62 year old Admiral.

The guest speaker, Ingram M. Stainback, Governor of the Territory of Hawaii, said that not only was Admiral Coffin a distinguished and beloved representative of the Coast Guard, but was also an active and valuable part of the Hawaiian community.

Harry L. Dawson, head of the Theo. H. Davies and Co. Steamship and Travel Department, then presented the Admiral with a table service made of Hawaiian woods on behalf of the shipping companies.

MSTS Employment Policy

Contrary to previous reports, MSTS plans to con- nue present policy in regard to the employment of hip's officers in the former Army Transports. No change vill be made until sufficient operating experience in- icates the desirability of applying the provisions of ection 302(g) of the Merchant Marine Act of 1936—vhich would require all deck and engineer officers to be nembers of the Naval Reserve, if eligible. If and when uch a policy is announced, it is certain to contain a aving clause which would exempt former long time em- loyees of the Army Transportation Service and the Army Transportation Corps.

Previously it had been reported that after October 1, 1950 (one year from date of establishment of MSTS) no new deck or engineer officers would be shipped in MSTS vessels who were not members of the Naval Reserve. This traditional policy dates from 1916 when all officers of the Naval Auxiliary Service had to be members of the U. S. Naval Reserve Force. The new rule would have exempted all former and present officers of the old ATS ineligible for Naval Reserve appointments.

100-Year Firms Of San Francisco Honored

Pioneer firms of San Francisco were honored at a luncheon at the San Francisco Commercial Club on April 21. Paul A. Bissinger, President of the San Francisco Chamber of Commerce, presided at the luncheon. Each firm celebrating its 100th anniversary in 1948, 1949, or 1950 was presented with a Certificate of Honor. Guest speaker was Joseph S. Thompson, President and founder of Pacific Electrical Manufacturing Corporation, whose subject was "A Century of Honor". Chairman of the 100th Anniversary Week Program was R. H. Rebele.

Honored at the Speakers' Table (pictured at the left) at the Pioneer Firms Luncheon were the following representatives of firms celebrating their 100th anniversaries:

Joseph Guglielmo, President, Phoenix Day Co.; R. E. Alderman, Agency Secretary, Royal-Liverpool Group; Louis J. Lalanne, owner of Ritz Old Poodle Dog Restaurant; Harmon K. Howard, Vice President, Marine Exchange, Inc.; W. A. Dow, S. L. Jones & Co.; Edward P. White, C. A. Worth & Co.; John A. Bunting, Rathbone, King & Seeley; Charles deB. Haseltine, Pacific Stevedoring & Ballasting Co.; Thomas G. Morton, President, Title Insurance and Guaranty Co.; Henry Sutliff, Sutliff Tobacco Co.; E. M. McNeill, Manager, The Methodist Publishing House; William A. Levensaler, Treasurer, Dunham, Carrigan & Hayden Co.; H. H. Fuller, President, Bethlehem Pacific Coast Steel; J. Frank Sullivan, President, Dohrmann Commercial Co.; M. Buich, Partner, Tadich Grill; Wakefield Baker, President, Baker & Hamilton; Daniel E. Koshland, Vice President & Treasurer, Levi Strauss and Co.; Paul Verdier, President, City of Paris; Wilson Meyer, President, Wilson & Geo. Meyer & Co.; W. Y. Kellogg, Secretary, Caldor Lumber Co.; J. Reseigh, President, Wakelee Drug Co.; P. D. Reitz, General Manager, McKesson & Robbins; Kendrick W. Miller, President, N. Gray & Co.; George Q. Chase, President, Kohler & Chase; Edward C. Binder, Senior Partner, Hoyt, Shepston & Sciaroni; George C. Thierbach, President, Jones-Thierbach Co.; John G. Ziel, President, Ziel & Co., Inc.; David S. Kamp, General Agent,

H. H. Fuller, President, Bethlehem Pacific Coast Steel Co.; George A. Pope, President, Pope & Talbot, Inc.; Herman D. Nichols, Vice-President, Tubbs Cordage Co., at the luncheon honoring pioneer firms.

Jew England Mutual Life Ins. Co.; Herman D. Nichols, ice President, Tubbs Cordage Co.; Elwood W. Wright, resident, Wellman, Peck & Co.; Ansel W. Robison, nsel W. Robison Co.; H. D. Pischel, Vice President,)ohrmann's; Harold F. Brehm, Manager, Coffin-Redngton Co.; J. Milton Hagler, President, Tay Holbrook nc.; James A. Folger, President, J. A. Folger & Co.; ieorge A. Pope, Jr., President, Pope & Talbot, Inc.; dward D. Keil, President, The Society of California ioneers.

The firm of McLean Goldberg Bowen and the San rancisco Chamber of Commerce were also celebrating heir 100th anniversaries.

Others present at the head table were Mrs. Joseph S. hompson; Kathleen Thompson Norris, author; Newton issinger, President, Bissinger & Co.; The Honorable homas A. Brooks, Chief Administrative Officer, City nd County of San Francisco; and R. D. Brigham, Presient of San Francisco Commercial Club.

Right: Also at the luncheon honoring pioneer firms were Daniel D. Strohmeier, Vice President, Shipbuilding division, Bethlehem Steel Co.; and Tom Ingersoll, Pacific Coast General Manager, Steamship Division, Bethlehem Pacific Coast Steel Co.

Cable Car is Christened on M. Greenberg's Sons 96th Anniversary

Almost to the day, 96 years ago, the firm of M. Greenerg's Sons was founded within a half a block of Caliornia and Montgomery Streets in San Francisco, where n March 15 the firm celebrated its birthday with a cable ar christening.

Cable cars are a nationally known symbol of the West nd San Francisco. It seemed fitting and proper that M. Greenberg's Sons, one of San Francisco's oldest firms hould celebrate their anniversary by supporting the efort to keep cable cars running, as they are both so much part of the growth of this great city.

The entire West Coast water shipping industry has layed a big role in the growth of this firm as they have lways devoted a great part of their production to manuacturing marine valves, wharf hydrants, marine fire proection brass goods, as well as many other standard and pecial marine product brass goods.

The firm grew as the West grew until today its modern plant is considered one of the finest in the country, and is the largest in the West. The plant now houses under one roof a complete engineering department, pattern shop, foundry, machine shop, and plating and finishing department. Greenberg's sales offices now cover all major cities in the United States as well as Hawaii and the Philippine Islands.

Heading this vast organization is a member of the third generation of the pioneer Greenberg family, Stuart N. Greenberg who has been active in the business since 1913. Through Stuart Greenberg's efforts, the firm developed and patented the first major improvement on a California-type fire hydrant, the "break off check".

The firm takes great pride in showing visitors through the plant and to all those who are interested a cordial invitation is extended.

T THE CABLE CAR
HRISTENING

eft to right: Samuel Flemming, Honolulu Iron Works; John Greenberg, fourth generation of he Greenberg family; F. F. Eliot, district manager, Crane Co.; W. W. Chapin, president of Calif. Street Cable Car Co. and publisher of The Argonaut; Deputy Chief Galli of the San Francisco Fire Dept.; Harry Fabris, assistant sales manager for M. Greenberg's Sons; Sandy Allen, Sacramento representative for M. Greenberg's Sons; Stuart N. Greenberg, president of M. Greenberg's Sons; Elmer K. Ross, manager of sales for M. Greenberg's Sons; J. H. Campbell, general manager of Calif. Street Cable Car Co.; R. S. Turner, export manager for M. Greenberg's Sons Far East and Philippine operations.

New Marine Station For General Petroleum

General Petroleum's new marine station at Neah Bay, Wash., designed to bring Mobil and Gargoyle products directly to the fishermen at their fishing grounds, was opened on April 24.

Located on the 589-foot pier of the recently-completed Fishermen's Cooperative Association docks, the installation includes a 60-foot float completely equipped for servicing vessels coming alongside, and the company's new bulk storage installations ashore. There are four 20,000-gallon storage tanks for fuel. Three 900-foot pipe lines carry products from the barge unloading area of the dock back to the shoreside tanks.

Los Angeles-Long Beach Propeller Club Hears Pennington

Maitland Pennington, Vice-President, Pacific Transport Lines, and one of the outstanding authorities on the overall rate and traffic picture as it applies to water transportation, addressed a recent meeting of the Propeller Club, Port of Los Angeles-Long Beach. Factual material mentioned by Pennington will be published in a later issue of the *Pacific Marine Review.*

Speaker's Table, Los Angeles Propeller Club:

Left to right: A. W. Marshall, Rear Admiral (Ret.); Stew Engel, President, Propeller Club, Port of University of Southern California; Leon Munson, Board of Governors, Propeller Club, Port of Los Angeles-Long Beach; Speaker, Maitland Pennington; Norman Dunnavant, President, Propeller Club, Los Angeles-Long Beach; H. Thatcher.

First row, front to back: Gordon K. Wright, Lillick, Geary & McHose; Reid R. Briggs, Lillick, Geary & McHose; S. J. Hindle, American President Lines; F. L. Walter, Marine Office of America; Robert A. Morrill, Cosgrove & Co., Inc.; Neil Dunning, Marine Office of America; David E. Livingston, Marsh & Mclennan; C. Warren Wells, Pacific Radio Marine Corp; R. N. Wolff, Dare Products; Lawrence Wolff, Union Oil Company of California; J. Robert Wood, Lillick, Geary & McHose; Harold A. Black, McCutcheon, Thomas, Matthew, Griffiths & Greene; J. Robert Gaffney, Ocean Agencies; Herbert E. Pickering, W. H. Wickersham & Co.

Second row: S. A. Hodges, Mackay Radio; Tom Cook, Richfield Oil; W. O. Nary, Richfield Oil; B. M. Boyd, Catalina Island Steamship Line; William Kane, Todd's; W. G. Sheldon, Luckenbach; George Bushnell, Pope & Talbot; M. A. Richley, retired; John Hunt, John Hunt Co.; W. A. C. Roethke, Lillick, Geary & McHose.

Third row: L. B. Mortimer, American International Marine Agency; A. B. Herbold, Crescent Wharf and Warehouse Co.; John A. Hyland, Crescent Wharf; B. J. Caughlin, LA Harbor Dept.; W. H. Schroeder, Citizens National Bank; Arthur Eldridge, LA Harbor Dept.; Burt Pegg, Marine Solvents; T. C. Lithicum, Red Anchor Dock and S. S.; James A. Killer, So. Calif. Cement; Lee Vincent, University of Southern California; Al Hill, Pacific Export-Import News.

Fourth row: Fred Hopper and Fred Simpson, golfers; Leonard Formosa, American-Hawaiian; C. E. Engstrom, Atchison, Topeka & Santa Fe; F. Mieding, Los Angeles Harbor; M. G. Rouse, Los Angeles Harbor; T. G. Maddox, Los Angeles Harbor; A. M. Strum, Coastwise Line, H. H. Pierson, Coastwise Line; J. P. Young, LA Chamber of Commerce; John C. McHose, Lillick, Geary & McHose.

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The newest link in the chain of Bethlehem shipyards hich extends from Boston to San Francisco, Bethlehem's eaumont, Texas, Yard—*after an extensive two-year program expansion and improvement*—now offers to ship owners d operators the most modern and highest quality ship pair and conversion facilities on the Gulf Coast. Included e a newly installed 15,000-ton floating dry dock, a 2,500- n marine railway, thousands of feet of utility-serviced erthing piers, big-lift traveling and floating cranes, yard ackage connecting with main-line railroads, and a com- lete range of modern shops and equipment—all backed by the efficient management and skilled personnel representative of one of the world's outstanding shipbuilding and ship repairing organizations.

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Paul Birchard Named Vice-President And General Manager at Enterprise

Appointment of Paul I. Birchard as vice-president and general manager of Enterprise Engine & Foundry Company, has been announced by the company at its San Francisco headquarters.

Birchard has been identified with the diesel engine industry for over 20 years, and has been associated with Enterprise since early in 1946. During the last war he served as a Navy Commander in charge of a Midwest Navy shipyard. Following this duty he joined Enterprise as assistant to the executive vice-president. In the same year he became head of production at Enterprise's South San Francisco plant, and subsequently general works manager. Since January, 1948, he has been vice-president in charge of engineering and manufacturing.

Paul Birchard, Vice President and General Manager of Enterprise.

The Five Year Pacific Coast Stevedore and Safety Contest Completed

The five year Stevedore and Terminal Injury Frequency Contest for the Byron O. Pickard Memorial Trophies has come to a close with the determination of the 1949 winners.

The trophies and certificates have been awarded annually to companies having the lowest cumulative compensable injury frequency in each group. Permanent possession of each trophy goes to that company which won it the greatest number of times during the five year period or, in the case of a tie, had the lowest frequency for the five years.

The trophies and certificates were presented to the winning Companies in the Southern California Area at a dinner meeting held April 14, 1950 in Long Beach and, in the Northern California Area at a dinner meeting held April 18, 1950 in San Francisco. The Oregon and Columbia River Area presented theirs at a dinner meeting held in Portland on May 10th. The date has not been set for the presentations in the Washington Area.

Pictures taken at the dinner meeting of Northern California Area companies, held April 18 in San Francisco, at which trophies and certificates were presented for the Safety Contest.

Top, left to right: Capt. G. H. Lee, C. J. Hendry Co.; Peter Howard, Howard Terminals; Frank P. Foisie, pioneer in safety work in the maritime industry, (Frank was speaker of the evening); Capt. Gordon Jones, Jones Stevedoring Co.; S. C. Davis, Accident Prevention Bureau; Gordon Wood, President, East Bay Terminals Association; J. H. Travers, Manager, Accident Prevention Bureau; Alec Ramsay, Fireman's Fund Insurance Co.

Bottom, left to right: Art Holstein, Grace Line; Bill Mellor, Jones Stevedoring; Capt. G. R. Munro, Matson Terminals; Ernie Jones, Jr., Jones Stevedoring; Peter Howard, Howard Terminals; Jack Slocum, General Stevedore & Ballast Co.; Art Christiansen, Marine Terminals; Oke Johnson, West Coast Terminals; Carl Beckman, Encinal Terminals.

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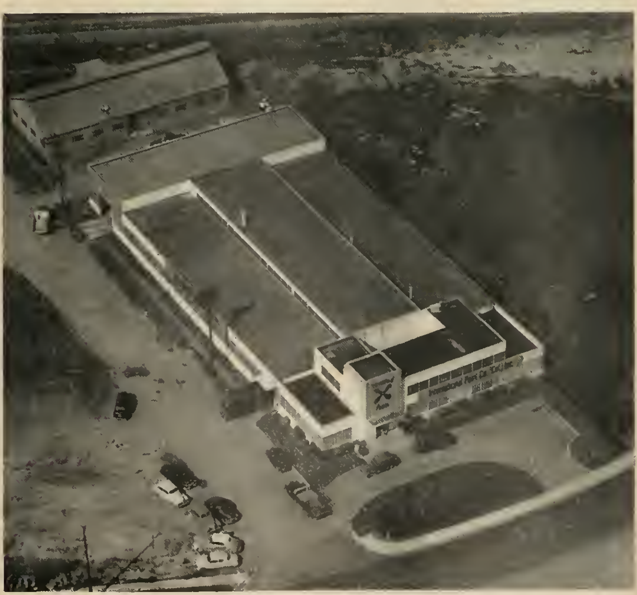
International Paint Moves Into New South San Francisco Plant

George A. Horton, Jr., Vice President of International Paint Co., (Calif.), Inc., advises that the Company moved into its new plant during the month of April. The plant is situated at Northwest Linden and Tanforan Avenues, South San Francisco, and is located on three acres of land adjoining the Southern Pacific tracks.

This new factory is devoted to the manufacture of International's world famous Marine Compositions and Paints for ocean-going ships, as well as for yachts and other small craft. In addition, International's new Decorative Paint Line is being manufactured in this plant.



Enterprise Diesel Sales Meeting at Sonoma, California

Members of the Enterprise Diesel Engine sales organization from district offices throughout the country met with the San Francisco home offi personnel at Sonoma Mission Inn, California, for their 3-day annual sales meeting which began April 10. Seated, left to right: G. C. Rase Sales Manager, Engine Division; J. E. Watson, General Sales Manager; G. B. Wright, District Manager, Chicago; P. K. Wabnig, Distri Manager, New Orleans; P. I. Birchard, Vice-President and General Manager; W. E. Butts, President; J. W. Coombs, Member Board of Director W. H. Porter, District Manager, Seattle; J. H. Sheusner, Chief Engineer; H. T. Anderson, District Manager, New York; H. L. Hansen, Chi Service Engineer. Standing, left to right: T. S. Pennebaker, District Manager, Fort Worth; H. F. Neuman, Stationary Sales; M. T. Prenderga Manager Service Parts; P. R. DeVos, Sales Engineer; S. F. Atsatt, Project Engineer; E. G. Harris, District Manager, Los Angeles; T. S. Whit Technical Assistant; K. F. Cramer, District Manager, Kansas City; L. J. Robbins, District Manager, St. Louis; W. E. Bishop, District Manage Washington, D. C.; J. N. Brophy, District Manager, Boston; H. J. Dauphinee, Export Sales; G. J. Brusher, Marine Sales; L. S. Noah, Adve tising Manager.

Watson Elected to Board of Weyerhaeuser

The Weyerhaeuser Steamship Company has completed purchase of the Pacific Coast Direct Line, Inc. At its Board of Directors meeting, Donald Watson was elected to the Board of Directors and was also made vice president and general manager.

Watson has been affiliated with the Weyerhaeuser Steamship Company since 1933 and has served in both operating and traffic capacities. Prior to his election as vice president and general manager, he served as vice president for the Pacific Coast Direct Line, Inc.

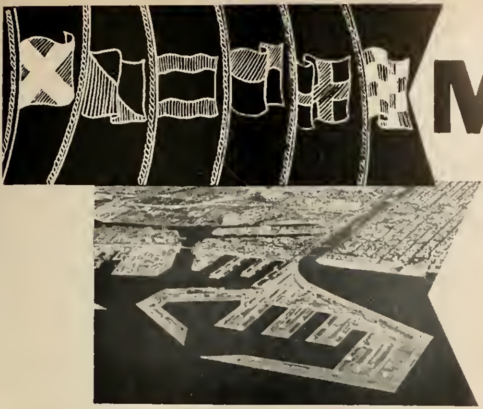
The Weyerhaeuser Steamship Company maintains six wholly owned general cargo ships in the intercoastal trade.

Los Angeles-Long Beach Propeller Club Meeting

Meeting of the Propeller Club of Los Angeles-Long Beach April 18th in Long Beach. The Union Oil Company presented a program which featured the singing of a "Minute-man" trio and a 30-minute color movie. Many Union Oil people were among the guests present.

Top: "Minute-men" trio entertaining the group.

Bottom: Seated, left to right: D. P. Hunter, manager, Refinery Sales, Union Oil Co.; Lawrence Wolff, (Chairman of the Day), Executive Assistant to the President, Union Oil Company, and 2nd Vice President, Propeller Club; N. E. Dunnavant, President, Propeller Club; Capt. J. B. Stene, Manager, Marine Operations, Union Oil; Howard Woodruff, Manager, Marine Exchange; Rear Admiral Marshall, USN (ret.); Kem Cadwell, Northwest Territorial Manager, Union Oil; J. W. Miller, Manager, Southwest Territory, Union Oil; Ray Ingram, District Manager, Union Oil, Long Beach. Standing are W. L. Spencer, Assistant Sales Manager, Union Oil, and C. E. Denton, Assistant Territorial Manager, Union Oil.



THE PORT OF LONG BEACH UPON COMPLETION OF ITS DEVELOPMENT PROGRAM

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Sims Takes Over Management of P. Banning Young Firm

Succeeding the late P. Banning Young as manager of the enginering and marine surveying firm of that name is L. Q. Sims, who has had years of experience as a Chief Engineer on various types of seagoing vessels and was formerly acting assistant Port Engineer at Union Oil Company. Over the years he has directed, supervised and passed upon all types of installations, overhaul, and repairs, of hulls and machinery. He joined the staff of P. Banning Young in July 1947.

Captain Art T. Ostrander, a well known and well qualified cargo surveyor, will continue to look after the loading and discharging of shipments and other related matters. Also on the surveying staff is Louis A. Bell, who has had many years of experience in engineering, design and repair of hull and machinery. He became associated with the firm in January 1949.

The P. Banning Young staff takes in all phases of cargo surveying, hull and machinery work, both as free lance Underwriters' Surveyors, and as Owners' Representatives.

W. H. Porter Heads New Enterprise Diesel Seattle Headquarters

Consolidation of office and warehouse facilities of Enterprise Engine Company, Inc., in Seattle, to be effective June 1, has been announced at the company's San Francisco headquarters. The combined quarters are at 2534 Westlake Ave., North. Offices were formerly located at 65 Madison Avenue.

W. H. "Bill" Porter, Enterprise District Manager in Seattle for more than 20 years, continues in that capacity. This move will place all facilities under one roof, providing customers in the Northwest with centralized sales, service and parts for Enterprise marine and stationary diesel engines.

Walter Hanson, an eleven year veteran with Enterprise, continues in his post as service engineer.

W. H. Porter, District Manager, Enterprise Engine Co., Inc.

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Electro-Hydraulic Steering Gear

The C. H. Wheeler Manufacturing Company now has available a catalog (No. 420-1) describing their Type L Electro-hydraulic steering gear. The parts for the gear have been standardized sufficiently so that mass production economies are possible. Different combinations of a few components permit the gear to be used for a wide range of operating conditions.

Twenty-one features of operation and construction are listed in the catalog, with six of these getting particular mention. Full descriptions of the three main sections of the gear are given together with the formula for determining torque.

This gear eliminates the necessity for many builders of small boats to design custom-built gears, replacement parts for which must often be "hand-tailored" and expensive. Parts for the Wheeler Type L Gear are carried in stock and can be furnished promptly for emergency repairs.

Not only are repairs simplified, but the actual selection of a gear may be made from the catalog, as soon as the factors of (1) torque, (2) hardover-to-hardover time, and (3) maximum rudder angle have been determined.

The C. H. Wheeler Mfg. Company can now supply every builder of ships, from tugboat to battleship sizes, with steering gear to fit his special requirements.

Catalog 420-1 may be obtained free on request from the C. H. Wheeler Manufacturing Company, 1814 Lehigh Ave., Philadelphia 32, Pa.

Paracoil Converters

"Paracoil Converters" are described in a newly published 12 page bulletin issued by Davis Engineering Corporation, 1064 East Grand St., Elizabeth 4, New Jersey.

88 standard sizes are described with full dimensional data and capacity ratings. The capacities are expressed for various steam pressures from 0 psi to 25 psi gauge; and for 9 temperature ranges covering in addition to the high level ranges those low level ranges usual in "Radiant Heat" applications.

The bulletin also includes the pressure drop for each unit at its rated capacity and provides data for determining the pressure loss through each unit when operating at less than its rated capacity.

There are also installation diagrams, material specifications, data for determining steam requirements and pipe sizes, together with examples of the use of the tables and data.

The Bulletin (No. 70 — Section K) may be obtained from the Davis Engineering Corporation.

Worthington Steam-Jet Deaerator

Worthington Pump and Machinery Corporation, Harrison, N. J., has available a new bulletin (W-210-B29) on the Worthington Steam-Jet Deaerator. The bulletin covers the requirements for efficient deaeration, and how the Worthington Steam-Jet Deaerator meets these requirements, its operation, and its construction features. Also included is a large diagram and other illustrations.

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It's a Daisy

Wagen Promoted By Pittsburgh Plate Glass

Appointment of A. D. Wagen as Pacific Coast Divisional Director for Pittsburgh Plate Glass Company's paint division has been announced by E. D. Griffin, vice president.

A. D. Wagen

Associated with Pittsburgh Plate's paint manufacturing operations since 1935, Wagen joined the firm as an accountant at the Milwaukee plant. He was appointed Pacific Coast divisional accountant during 1941 and has served as assistant to the Divisional Director of west coast operations during the past three years.

A native of Madison, Wisconsin, Wagen is a graduate of the University of Wisconsin. He is a member of the Executive Committee, Los Angeles Paint, Varnish and Lacquer Association and a Director of the Los Angeles Chapter, National Association of Cost Accountants. The company's West Coast office is at 7412 Maie Ave., Los Angeles.

As divisional director, Wagen succeeds Louis F. Theurer who retired after 31 years service with the paint division.

G. E.'s New Manual Of Electric Instruments

A revised edition of General Electric's "Manual of Electric Instruments" has been announced by the company's Meter and Instrument Divisions. The new edition describes the fundamentals of construction and operating principles of all major types of electric instruments.

Prepared primarily for use in schools, the manual also is designed for men in industry who wish to gain familiarity with the electric instruments with which they work. Its thirteen chapters explain the fundamentals of such instruments as thermocouples, synchroscopes, frequency meters, and electric telemeters. The 150 pages are extensively illustrated by photographs and diagrams. An added feature of this library-type textbook is a full reference index.

Priced at $1.00 per copy, the "Manual of Electric Instruments" (GET-1087A) may be obtained from the General Electric Company, Schenectady 5, N. Y.

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The mechanization of farming has meant a $5,000 to $20,000 investment in machinery for the average farm.

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New Vice-Presidents Of Fairbanks, Morse

At a recent meeting of the Board of Directors of Fairbanks, Morse & Co., two new Vice Presidents were elected. These are O. O. Lewis, Vice President in charge of Sales, and F. J. Heaslip, Vice President in charge of Purchases and Traffic.

O. O. Lewis

Both men have been associated with Fairbanks, Morse & Co. for many years. Lewis joined the organization in 1908 as a clerk.

In 1932 he was appointed Manager of the company's Atlanta Branch House, which position he filled until December 1943 when he was moved to Chicago headquarters and appointed Assistant Sales Manager. In 1948 he was promoted to Sales Manager, and now Vice President—Sales. He was also elected a Director of the company.

Heaslip joined the company in 1927 as a buyer in the Purchasing Department. He was made Purchasing Agent in 1935 and Director of Purchases in 1942. He has been a Director of the company for several years.

F. J. Heaslip

Eggum Advanced By Chamberlin

Announcment of the appointment of Andrew A. Eggum to the position of Vice President in charge of operations was made by W. R. Chamberlin Sr., President of W. R. Chamberlin & Co., carriers of packaged lumber.

Eggum started his sea career 14 years ago as an ordinary seaman and signed on with Chamberlin as deck officer in 1942. Six years later he was promoted to operating manager.

Andrew A. Eggum

Spring Meeting —Society For Experimental Stress Analysis

The spring meeting of the Society for Experimental Stress Analysis will be held at The Hotel Statler, Cleveland, Ohio, on May 25, 26, and 27, 1950. Inquiries should be addressed to the Society for Experimental Stress Analysis, P. O. Box 168, Cambridge 39, Mass.

Moore-McCormack Adds 5th Ship to Pacific Coast —South America Run

The Moore-McCormack cargo-passenger liner *Mormacgulf* sailed March 18 from San Francisco on her first voyage to South America's East Coast since being added to the fleet of the Pacific Republics Line, one of Moore-McCormack's three operating units.

The *Mormacgulf* is the fifth ship to be assigned to the company's Pacific Republics Line operation, making possible a sailing every twenty-one days between Vancouver, British Columbia, and Buenos Aires, Argentina, with stops en route at Seattle, Portland, Oakland, San Francisco, Los Angeles, Balboa, Cristobal, Cartagena, Kingston, Curacao, Puerto Cabello, La Guaira, Trinidad, Rio de Janeiro, Santos, Montevideo and Buenos Aires.

The *Mormacgulf,* commanded by Captain L. E. Cudahy, arrived in this port March 1 northbound, after having sailed in January from New York for Buenos Aires, then north via the Panama Canal to enter the Pacific Coast service. Her present voyage southbound is, therefore, the second leg of her first trip.

The *Mormacgulf,* a C-3 cargo-pasenger ship, was built at the Ingalls yard at Pascagoula, Mississippi, and was taken over by Moore-McCormack Lines in May 1946. She operated in the American Republics Line service which Mooremack operates between the East Coast of the United States and the East Coast of South America, and also made one voyage to the Far East, and one trip in the Pacific Republics Line service before being given her present assignment as a regular unit of the Pacific Republics Line fleet.

The Pacific Republics Line fleet also consists of the C-3 vessels *Mormacland, Mormacdawn, Mormacsun* and *Mormacrey.* Each of the ships has generous cubic of refrigerated and deep-tank space and facilities for twelve passengers.

Capt. L. E. Cudahy of "Mormacgulf" and K. C. Tripp, Pacific Coast Manager of Moore McCormack Lines. Capt. Cudahy looks skeptical. He wasn't figuring on going up, and has never been told to go up before.

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Salvage of S.S. "Steel Chemist"

(Continued from page 40)

astern. At about 300 feet the stern had reached deeper water, and the forward section had to be lightened to cross the ledge. The fore sections were put under air pressure and the stern section allowed to fill, thus raising the fore part of the ship to clear.

As the beach gear cables were progressively disconnected and dropped clear, Derrick Barge No. 5 pulled the ship with increasing speed until 2150, when the *Steel Chemist* was entirely floated. Under tow by the tugs *Viking* and *Relief*, she headed for Long Beach, where she arrived at 1145 on April 16, and, after releasing the *Viking*, the tugs *Relief* and *Crowley No. 24* and *Crowley No. 27* brought her safely to her berth. After discharging her cargo, she was brought to the Todd yard, where the big repair job was completed, under the supervision of—Walter Martignoni.

But here is the brief survey report as it goes down in the records:

On April 10, 1949, at about 0650, the American S.S. *Steel Chemist* stranded on the south side of northwest corner of San Nicolas Island, near Santa Barbara, Calif., while on a voyage from the Netherlands East Indies to Atlantic Coast, via Honolulu and Los Angeles.

U. S. Coast Guard Tender *Diligence* arrived at 1840, ran towing hawser to *Steel Chemist* and started pulling.

2100 Tug *Kanak* took towing line from U. S. Coast Guard Tender *Diligence*. The *Kanak* planted her anchors and commenced pulling.

April 12, at 0700, commenced planting anchors and laying out heavy ground tackle. 1900 started to jettison cargo from No. 5 shelter deck.

April 13, laying out and securing additional ground tackle.

April 14, started jettisoning cargo from No. 1 'tween decks at 0930 and from No. 2 'tween decks on barge at 1500. At 1530 anchored Smith-Rice Salvage Barge No. 5 astern of *Steel Chemist* and placed hauling wires on board.

April 15, at 2150, vessel floated from stranded position, taken in tow by salvage tugs *Viking* and *Relief*.

April 16, at 1300, *Steel Chemist* was delivered to Pier A, Berth 1 at Long Beach, California.

SEA TIME. Merchant Marine Naval Reserve officers may utilize sea experience gained in 2 weeks, 56 days or one year active training duty periods for license raising purposes. It is advisable to obtain letters from commanding officers indicating type of duty performed afloat, such as deck or engine room watch officer and whether collateral duties included assignments in navigation, or operations, or engineering departments. In the matter of evaluating Naval service for upgrading purposes, the Licensing and Certificating Section of the U. S. Coast Guard has been very cooperative.

From Merchant Marine Naval Reserve Bulletin

The Days of Sailing

This sketch, drawn by Emmett A. Hoskins, shows the barkentine "Discovery" on her 20½ day run from Honolulu to San Francisco in January 1892 with 10,241 sacks of sugar. Crossing the bar, the vessel shipped a heavy sea that tore the helmsman from the wheel.

New Vice-President Of Hyde Windlass Company

Rodney E. Ross, Jr.

Communists Barred As Licensed Radio Officers

The Disttict Court of the United States for the District of Columbia on February 7, 1950, upheld the right of the United States to deny licenses as radio telegraph officers to persons affiliated with or sympatheic to the Communist Party.

The case came before Judge Burnita Matthews as the result of a motion for a preliminary injunction against the Commandant of the Coast Guard by three radio operators who had been denied licenses, pursuant to section 3 of the act of May 12, 1948 (46 U. S. C. 229) (c) on the ground that they were not, in the opinion of the Commandant, "suitable and safe" persons to be entrusted with the powers and duties as a licensed radio telegraph officer.

At the same time that the motion for a preliminary injunction was filed, counsel for the three unsuccessful applicants also filed a motion for the appointment of a three-judge court, pursuant to the provisions of 28 U. S. C. 2284. Argument on this motion was also heard by Judge Matthews about 3 weeks prior to the hearing on the preliminary injunction and when it was ascertained that the plaintiffs were not directing their attacks at the constitutionality of the act of May 12, 1948, but rather to the constitutionality of the acts of the Commandant under the statute, Judge Matthews dismissed this latter motion.

In dismissing the motion for a preliminary injunction Judge Matthews stated that the statute in dispute vested broad discretionary judgment in the Commandant of the Coast Guard and that, in the absence of any evidence of misuse or distortion of the discretionary power vested in the Commandant, the Court would not interpose its discretion or judgment in the matter.

The U. S. Coast Guard patrols spotted 40,232 icebergs during 1949.

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Reeves Returns From Conference

Carroll F. Reeves, Pacific Coast Manager, De Laval Steam Turbine Co., recently returned to his headquarters in San Francisco from the first general Sales meeting since the war, held at De Laval's home office and works at Trenton, N. J. The conference was attended by one hundred men from the United States and Canada. Presiding at the meeting were President George W. Smith, Jr., and Executive Vice-President James P. Stewart.

Neergaard Elected President of Bilge Club

Hampton Neergaard of the Burns Steamship Company was elected president of the Los Angeles Bilge Club at the annual election held May 9 at the Lakewood Country Club. He succeeds Floyd Nelson.

Win Rash was elected treasurer and Bob Snodgrass secretary. Directors elected were James J. Buntin, Forrster Shipyards; Fred H. Cordes, Hilcone Steamship Co.; John Marriner, Craig Shipyards; Frank Cavanaugh, Cavanaugh Machine Co.; William A. Kane, sales manager, Todd Shipyards. and F. A. Scheige, marine surveyor.

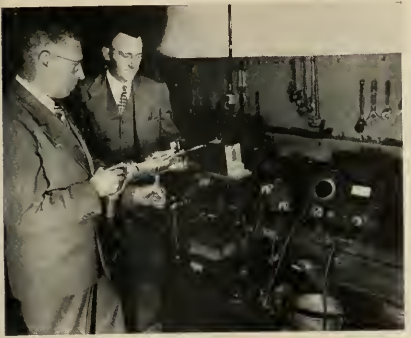
Hampton Neergaard

Southern California Section NAME, April Meeting

The quartet above were snapped at the meeting of the Southern California Section, Society of Naval Architects and Marine Engineers, on April 18th in Long Beach. Speaker of the evening was William Selover, Southwestern Manager, Sperry Gyroscope Company, whose talk was on the development of the Sperry Gyroscope and electronic aids to navigation. He also gave a special demonstration of Loran.

Above, left to right: Pat Ryan, incoming chairman of So. Calif. Section; Tom Forster, 1949-50 chairman; William Selover; R. B. Hopper, electronic service engineer, Sperry Gyroscope Company.

Airetool-Fisher Control Demonstrated



Pictured above is Larry Rapp and Walter Hill operating the Airetool-Fisher Control. This control is for precision rolling of heat exchanger tubing. The amount of power for rolling is predetermined and set on the control. The motor is started up and when the output on the motor reaches the predetermined power setting, the motor stops. The operator then pulls back on the motor which starts rolling in reverse.

The control is distributed through C. C. Moore & Co., Engineers, who are representatives of the Airetool Manufacturing Company.

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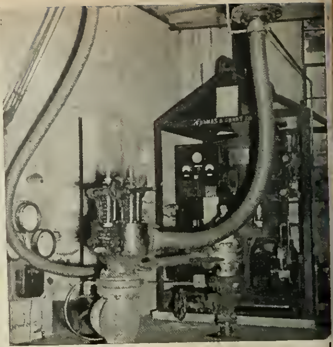

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Jones is V-P of CF&I

F. S. Jones has been elected vice president in charge of sales for The Colorado Fuel and Iron Corporation, to succeed Newell H. Orr who has retired. Orr will continue in an advisory capacity.

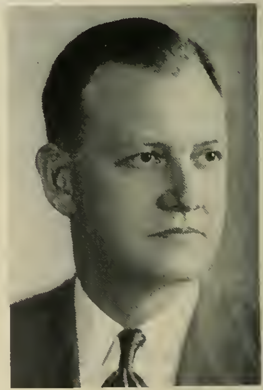
Jones joined CF&I in 1908. He began selling in Hutchinson, Kansas, as a combination fuel and steel salesman in 1913. Since then he has held managerial positions in most of the company's territory, occupying offices in Grand Junction, Salt Lake City. Oklahoma City and Denver. He will continue the aggressive sales program which has been in progress covering the sales of the products of the American Wire Fabrics Corporation, The California Wire Cloth Corporation as well as the products of the Wickwire Spencer Division.

Jones will be located at the general offices of the company in Denver.

New Vice-Presidents Of Sharples Corp.

G. J. Keady, President of The Sharples Corporation of Philadelphia, has announced the appointment of Fred W. Stakelbeck and Charles E. Printz as Vice Presidents of the corporation.

Stakelbeck, who attended Drexel Institute of Technology, has been associated with The Sharples Corporation in an engineering capacity for sixteen years. Previous to this new responsibility he was Works Manager of the company.



Fred W. Stakelbeck

Printz is a graduate of the Colorado School of Mines. He joined The Sharples Corporation in 1938

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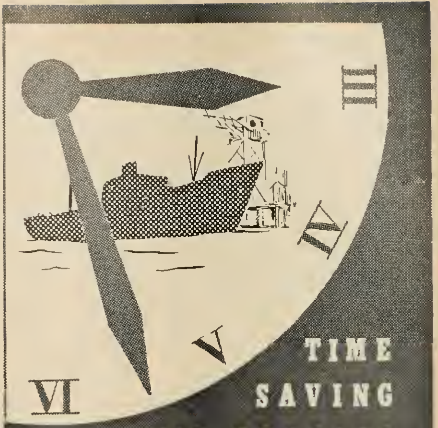

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after serving as the South American representative of the General Electric Company. Previously he had been Sales Manager of the company.

The Sharples Corporation is engaged in the manufacrure of high speed centrifuges and the development, through research and invention, of Centrifugal Processes for practically every industry including steel, pharmaceutical, food, petroleum, and chemical.

Charles E. Printz

Fairbanks, Morse President

The third generation Morse became President of Fairbanks, Morse & Co., on March 22, 1950.

Robert H. Morse, Jr., who started with the company in 1916 in the foundry of the Beloit, Wisc., plant, was elected to the Presidency by the Directors, following the annual meeting of stockholders.

Morse has been Vice President in Charge of Operations. Previously he was Vice President in Charge of Sales, Assistant General Sales Manager and has held many other positions.

His father, Colonel Robert H. Morse, whom he succeeded, becomes Chairman of the Board. Colonel Morse has been President since 1931 and has spent 55 years with the company. He also started in the Beloit Plant.

His Grandfather, Charles Hosmer Morse, was the founder of the company and was Chairman of the Board upon his death in 1921. It was in 1847 when he bound himself out for $50 a year to learn the scale business with the firm which later became the present company.

Robert H. Morse, Jr.

Morse is also President of the Diesel Engine Manufacturers Association.

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Shipbuilders Council's Annual Meeting

The 21st Annual Meeting of the members of the Shipbuilders Council of America was held April 12 at the Whitehall Club, 17 Battery Place, New York City.

H. Gerrish Smith was elected Chairman of the Board, a newly created position, after having served 21 years as President. Leigh Russell Sanford who joined the Council in 1946 as Executive Vice President was elected to succeed Smith as President. Re-elected as Vice Presidents were Capt. Roger Williams and Winder R. Harris. Clifford C. Knerr was re-elected Secretary-Treasurer.

L. R. Sanford, new president of Shipbuilders Council.

The following were elected or re-elected to the Board of Directors:

For Three-Year Term Expiring March 31, 1953

William S. Newell, President, Bath Iron Works.
M. B. Lanier, President, Ingalls Shipbuilding Corporation.
W. H. Gerhauser, President, The American Ship Building Company.
James C. Merrill, Sr., President, Merrill-Stevens D/D & Repair Co.

(Continued on page 81)

James G. Craig of Craig Shipbuilding Co., member of Board of Directors of Shipbuilders Council.

(Continued from page 80)

For Two-Year Term Expiring March 31, 1952

T. H. Bossert, President, New York Shipbuilding Corp.

Wm. E. Clark, Vice President, Dravo Corporation.

For One-Year Term Expiring March 31, 1951

James G. Craig, President, Craig Shipbuilding Co.

W. L. Mingledorff, Sr., President, Savannah Machine & Foundry Co.

G. W. Gibbs, Sr., Chairman of the Board, Gibbs Corp.

Walter L. Vaughn, Sr., Secretary-Treasurer, E. L. Post & Co.

C. Howard Reeder, President, Baltimore Copper Paint Co.

D. W. R. Morgan, Vice President, Westinghouse Electric Corporation.

Seafarers

Mr. and Mrs. John Parker who sailed in April on the "Lurline" for Honolulu. Mr. Parker is president of the American Marine Paint Company of San Francisco.

P. Banning Young Passes

P. Banning Young, who developed and directed the engineering and marine surveying company of that name during the past twenty odd years, died in Wilmington March 14.

A member of the family which founded Wilmington, Mr. Young was born there in 1884, the son of Andrew and Carrie Amelia Young.

He served an apprenticeship in Fulton Iron Works, now Baker Iron Works, in 1900, and later went to San Francisco where he was employed by the Union Iron Works. He then went to Portland where he was associated with Columbia River Shipbuilding Company, and in 1920 returned to Los Angeles harbor to work for the Southwest Shipbuilding Company.

In 1923 he entered into a partnership with his father known as the Andrew Young and Son Consulting Engineers and Marine Surveyors, and they were joined by Fenton Young in 1925. He became a member of the Board of Marine Underwriters in San Francisco in 1928.

In 1947 he became a free lance marine surveyor, representing all marine underwriters on the coast.

Young was a charter member of the Bilge Club and the Propeller Club of Los Angeles Harbor and a member of the Naval Architects and Marine Engineers Association.

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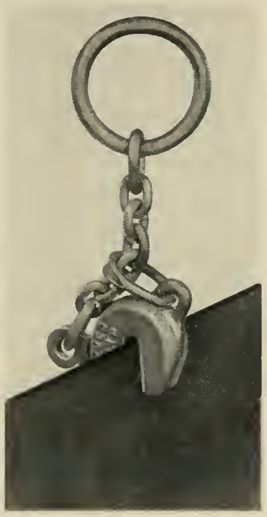
Steel Plate Handling Clamps

The Never-Slip Safety Clamp Division of Kensico Manufacturing Company, Inc., Mount Kisco, New York, announce a complete line of steel plate handling clamps, both horizontal and vertical styles, ranging in sizes to handle plate from 1/8 inch to 6 inches and up to 12 tons. The jaw bearing surface of the clamp is a grooved, hardened tool steel replaceable plate.



Further information and literature is available upon request.

Bulletins On Wire Rope

Four complete and descriptive bulletins for Western wire-rope users are available in bound form from The Republic Supply Company of California, distributors for Edwards Wire Rope. These bulletins have been prepared by the E. H. Edwards Company to assist industry in the proper selection and correct use of wire rope to obtain the greatest possible service life. Bulletins cover the following subjects and are classified as follows: B—The Rope to Choose. C—Use and Abuse. D—Splicing and Fitting. E—Data and Tables. Copies of these reference books are available from The Republic Supply Company of California, Box 2137, Terminal Annex, Los Angeles 57, California.

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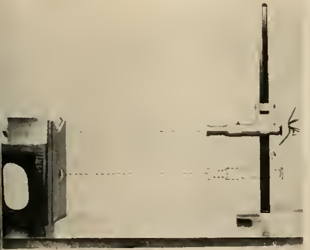
Height Gage Scope

A new measuring device named the "Height Gage Scope" has been announced by the Quality Control Company, 6356 Hollywood Boulevard, Los Angeles 28, Calif. The Height Gage Scope combines the features of a telescope with a microscope and attaches to any 18″ or 24″ Height Gage making a universal shop inspection instrument. It has five power magnification, coated lens, internal focusing, a wide field, and provides an erect image throughout a working distance of 2½″ to infinity.



The Height Gage Scope measures dimensions which can be seen but not touched. The dash-lined cross-hair will distinguish .001″ at two feet, and has a concentric circle for picking up hole centers. Measurements are read directly on the height gage vernier. With the height gage mounted horizontally, the instrument serves as a useful toolroom microscope. The Height Gage Scope replaces the scriber or indicator for checking hard-to-reach places such as dimensions on points, wires, grooves, engraving, and through transparent objects. Inspection of tapered cylinders, recesses, ordinate stations on templates and cams is made relatively simple.

The Height Gage Scope is 9¼″ long, $1\frac{7}{16}''$ diameter, and weighs 12 oz. It has no separate attachments and its case fits into the regular height gage box. The price is $88.35 and shipments are being made on receipt of order.

New Nordberg Bulletin

The Nordberg Type DBM-24 Marine Diesel Engine is described in Bulletin 175 recently published by Nordberg Manufacturing Co.

The Nordberg Type DBM-24 Marine Diesel Engine is of the four-cycle, single acting, mechanical injection, trunk piston, direct reversing design. This engine has a 16½″ bore and 24½″ stroke and is built with six, seven and eight cylinders, supercharged or non-supercharged, with ratings up to 1900 horsepower at normal speed of 300 RPM.

Like other four-cycle Nordberg Diesels, the DBM-24 is built by the Busch-Sulzer Division of Nordberg Manufacturing Co. at St. Louis, Missouri.

Bulletin 175 describes the reverse and control gear, cooling, lubricating and fuel injection systems of the Nordberg DBM-24 Marine Diesel Engine. Advantages of supercharging are listed and an engine cross section is shown. Dimensions and horsepower ratings of the engine are also given in this bulletin which is available free upon request to Nordberg Manufacturing Co., Milwaukee 7, Wis.

B & W Data On Welding Boiler Tubes

A new bulletin of technical data on electric-resistance-welded steel boiler tubes has been announced by The Babcock & Wilcox Tube Company. For convenience in ordering, tables are furnished on maximum allowable working pressures, conforming to ASME Specification SA-178, for different diameters and gages of tubes for water-tube and fire-tube boilers. Another table determines the weight in pounds per lineal foot of steel tubes in various minimum wall sizes.

The bulletin, TB-331, is available free on request to The Babcock & Wilcox Tube Company, Beaver Falls, Pa.

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Johns-Manville Flameproof Drapery

Recently introduced by Johns-Manville is a colorful, flameproof drapery material called Colorbestos. The material combines asbestos yarn with a warp of cotton. In weaving, the soft, evenly-twisted asbestos yarn surrounds the warp threads to provide a fire-safe fabric that will not flash, flame or "after-glow," resulting in a material that meets the need of ships, theaters, hotels, clubs and schools. In addition to draperies, the fabric may be used as a decorative wall covering.

Colorbestos is now being produced in ten plain colors and three different weaves. Stripes and multicolor prints, as well as other weaves, can be made to order and special colors can be matched. The standard colors are: vintage red, jade green, larkspur blue, sunlight yellow, beige, dusty peach, surf green, autumn rust, tropical sand, and haze blue. These come in a plain weave, lame cloth and ratine cloth.

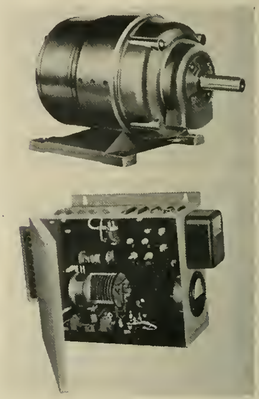
All colors are fast to daylight, washing, dry cleaning and hot (dry or moist) pressing. Colorbestos can be washed with household soaps and water (140 F to 160 F), or dry cleaned with conventional solvents without damaging either appearance or fire protection.

She knows she's safe with flame near Colorbestos, the new flameproof asbestos fabric made by Johns-Manville.

Colorbestos is available through Johns-Manville district offices. It comes in 50 yard or 100 yard bolts and the standard width is 48 inches. The average weight per square yard varies from 0.92 lbs. for the plain weave to 1.1 lbs. for a ratine weave. The retail price, depending on weave and quantity, will range from approximately six to eight dollars a yard for stock colors.

New, Variable-Speed, 32-Volt Marine Generator

A new marine-type generator and control package, designed for crowded engine-rooms where it is not practical or possible to install a complete engine-driven generating plant, has been announced by D. W. Onan & Sons Inc., Minneapolis, Minnesota, manufacturers of electric generating equipment.



Onan Generator

Powered by the main engines on the boat, this compact 2000-watt generator, with its wall-mount control, charges 32-volt, 16-cell lead batteries regardless of variations in driven speed within the range of 1000 and 3000 r.p.m. The generator starts charging at approximately 900 r.p.m. and delivers its full 50-ampere output at about 1100 r.p.m.

A circular on the Onan Variable-Speed 32-volt generator (Form A272-350) is available on request to D. W. Onan & Sons Inc.

20,000 Miles Of Transportation

When it is pointed out that a Pittsburgh steel plant gets iron ore from Minnesota, fuel oil from Texas, manganese from Russia and India, ferro-chrome from Rhodesia, nickel from Canada and calcium molybdate from Colorado, one suddenly realizes what a vital factor transportation is in the manufacture of steel.

Pacific MARINE REVIEW

JUNE, 1950

Ports of the Pacific...

San Francisco

Ever since steam took over from sail, many ships in San Francisco Bay Harbors have depended on Gargoyle Marine Oils and Gargoyle Lubrication Engineering Service. These famous products, and the experienced help of Socony-Vacuum engineers, are available in more than three hundred ports, around the world from San Francisco to Shanghai.

Photo by Clyde Sunderland

GARGOYLE
Lubricants

GARGOYLE

MARINE OILS AND ENGINEERING SERVIC
GENERAL PETROLEUM CORPORATIO
(A Socony-Vacuum Company)

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CORDAGE COMPANY

Keeping pace with
MARINE PROGRESS *since* **185**

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years ago. When put to the test of
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than any that came before it. W
Because water repellency and l
cating treatments have been stea
improved and new methods have b
developed to give greater unif
ity of lay, weight and circumfere

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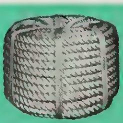
nila rope, then you want Tubbs E
Superior Manila and Superc
They have behind them 93 year
constant improvement to make t
today the best in Manila rope.



SUPERCORE is available in sizes 6 inches circumference and larger.

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Pacific MARINE REVIEW

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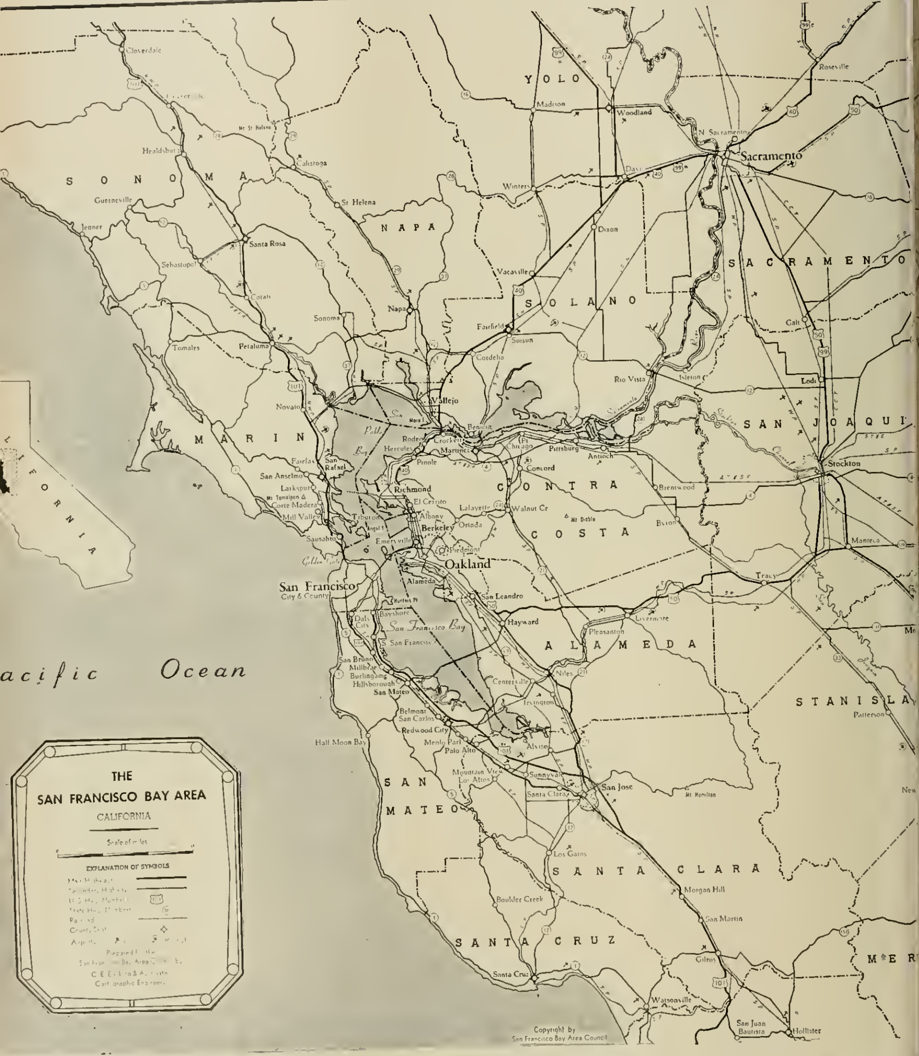
The Ports of


THE
SAN FRANCISCO BAY AREA
CALIFORNIA
Scale of miles
EXPLANATION OF SYMBOLS
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San Francisco Bay Area Council by
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Cartographic Engineers
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Woodland
Davis
Dixon
Vacaville
Fairfield
Suisun
Cordelia
Rio Vista
Isleton
N Sacramento
Sacramento
Roseville
Galt
Lodi
Stockton
Manteca
Patterson
Sacramento River
San Joaquin River
Stockton Channel

San Francisco Bay

THE multiple port situation on San Francisco Bay is one of the most famous, yet least understood, of world port areas. This consolidated series of articles on the individual ports of the Bay mentions the facilities available to shippers in each, and presents an overall picture which includes every important type of shipping service, both commercial and military. Any ship inbound through the Golden Gate enters San Francisco Bay and, in fact, enters the confines of the City of San Francisco within whose boundaries the Golden Gate is placed, as are certain other well known installations such as Treasure Island, Yerba Buena Island, the San Francisco Port of Embarkation, the San Francisco Naval Shipyard, the Naval Anchorage, and Alcatraz.

Strictly speaking, however, the Port of San Francisco is limited to that stretch of piers under the control of the State Board of Harbor Commissioners, and many sets of statistics on San Francisco shipping include only the cargo passing over these piers. Even barge loading on the offshore side of the vessel may be attributed to some other Bay port from which the barge was towed. Certain other cargoes belonging to San Francisco owners may be discharged or loaded in such other Bay facilities as the great sugar refinery at Crockett or the oil ports of Avon, Martinez, Oleum or Richmond.

Another little understood factor, even by shipping people, is the possibility of a pier seeming to be idle and yet be a hive of activity. As this is written there is a shortage of pier space on the San Francisco waterfront. This could be possible even though there were not a ship in port, because there is a necessary period between ship departures and arrivals during which cargo must be dispersed and a new cargo for the next arrival accumulated. Some of these oddities will be borne out by the details in the following articles about the ports of San Francisco, Oakland, Alameda, Richmond, Redwood City, and Stockton.

Not featured in any of the articles are such additional Bay Area facilities as the Presidio, the Naval Supply Center and Army Supply Base at Oakland, the Naval Air Base at Alameda, Moffett Air Base at Sunnyvale, the Mare Island Naval Shipyard, the Arsenal at Benicia, Army's Hamilton Air Field, and the private shipbuilding yards of Bethlehem, Todd and Moore, and the Maritime Commission's Reserve Fleet of over 300 ships.

The defense installations in the Bay Area have a major influence on port activity, especially those installations which operate or service the ships. Several of them are featured in the following pages but the Navy figures have been consolidated and show military employment, exclusive of forces afloat and transient, of 6,600 and civilian employment of 36,500. The monthly payroll exceeds $14,000,000. The Military Sea Transport Service (MSTS) operates over 50 ships on the Pacific. Included in Navy installations are the nation's largest drydock and the world's mightiest crane. The Air Force Base at Hamilton Field employs 4500 officers and air men and 600 civilians.

Port of San Francisco

THE Port of San Francisco has been owned and operated by the State of California as a public utility serving the waterborne commerce of the city, state, nation, and the world since 1863. It is operated by the Board of State Harbor Commissioners and represents an investment of $100,000,000. This figure is being constantly increased as additional facilities are added, with present construction valued at over $7,000,000.

The Harbor Board of three members operates through the port manager who has many major types of business under his control. Included are the Refrigeration Terminal, the Bulk Copra Terminal, the Grain Terminal, the Banana Terminal, the Belt Line Railroad, a fumigation plant and many pieces of floating, salvage and fire fighting equipment in addition to miles of piers.

There are 103 regular trade routes serving 268 world ports with 23 ship lines operating Transpacific, 18 European, 12 Mexico, Central and South American, 3 round-the-world, 11 Hawaii, South Seas and Australian,

General
Robert H. Wylie
Port Manager,
Port of San Francisco

9 West Indies, 4 Middle East, 6 Africa, 10 intercoastal and 7 coastwise.

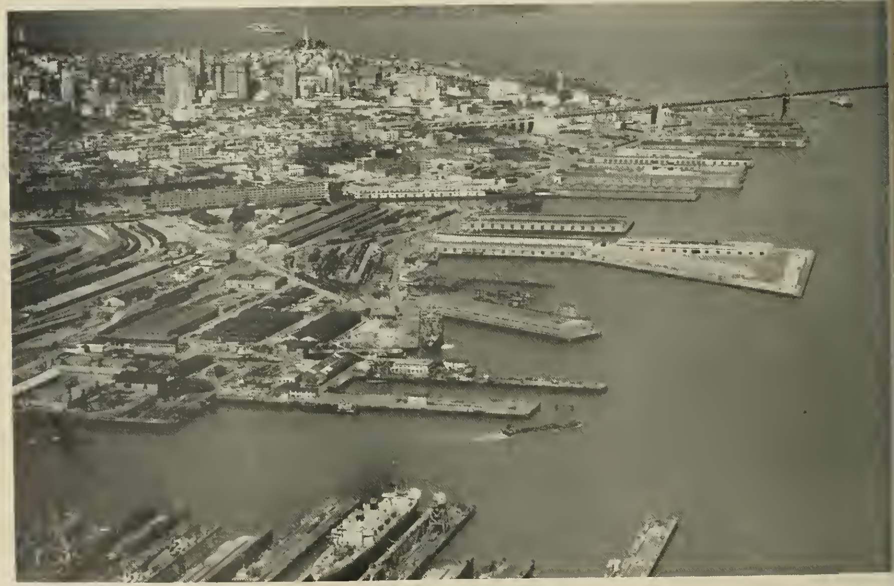
Harbor management must be on the lookout for plans for improving the facilities or it is confronted with competition from other ports and also with competition from non-maritime forms of transportation. Beyond that it has many tenants who also have competitive situations to meet. The San Francisco Harbor Board is reaching out in the construction and planning of new facilities and the improvement of old ones. As this is written, two finger type piers, 30 and 32, are being combined into a single quay type for the more expeditious handling of rail and truck cargo. Another pier, No. 35 is being rearranged as a permanent deluxe passenger liner terminal.

The so-called Mission Rock cargo terminal, shown in one of the pictures, will add 29 acres of covered and open wharf area to the port and will be completed within three months at a cost of $5,000,000.

Outstanding among the developments in the Port is Foreign Trade Zone No. 3 at Pier 45. This Zone has been in operation for just two years and has handled over 1,000 lots of freight from thirty foreign countries, totaling 16,000 tons and valued at over $8,000,000. The Zone is to be doubled in area in the near future and will then provide berthing space for four vessels to discharge simultaneously. Briefly described, the Foreign Trade Zone is an isolated public utility where merchandise may be held duty free until finally disposed of in whole or partial lots. It is in a bonded warehouse; there is no customs duty; no customs entry, customs bond or import tax. There is no time limit on storage, and

Arrival of the transpacific luxury liner "President Cleveland" with its accompanying shoreside activity. The view shows stretch of the Embarcadero, south of the towering San Francisco-Oakland Bridge.

Aerial view of Port of San Francisco from Central Basin (foreground) to Foreign Trade Zone (Pier 45, extreme upper left). Mission Rock Terminal, which, when completed, will add six acres and six ship berths to the Harbor's facilities, is at right center. Representing an investment of more than $5,000,000 by the Board of State Harbor Commissioners, this will be one of the most modern cargo terminals in the United States. The tower of the Ferry Building appears just above the bridgehead of the San Francisco-Oakland Bay Bridge.



Top: 500,000 bushel capacity bulk grain elevator built by the Board of State Harbor Commissioners at a cost of $1,250,000 to serve the export grain trade. Ships come alongside the chute tower at the right. Bulk grain cargoes of 10,000 tons have been loaded in 48 hours.

Bottom: The busy Belt Railroad, which operates along 67 miles of track on the 5-mile Embarcadero, is on a 24-hour a day schedule. The trackage includes spurs on or in the Port's 42 piers, and on the shoreside leading to adjacent warehouses and industries. This picture shows a half mile "drag" of freight cars passing the Ferry Building, bound for the northerly reaches of the waterfront.

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Not the least interesting of the innovations in this harbor is the helicopter landing at the southeast corner of the old Ferry Building. But the imagination falters at the prospect of the planned World Trade Center which is scheduled to cover nine city blocks, test borings for which were begun last month on State Harbor property.

Business in the port is good. The postwar lag in intercoastal traffic is about past and all intercoastal ships are sailing full in both directions. The number of vessels in coastwise service is slowly increasing and, in spite of the situation in the Orient and the preponderance of Marshall Plan shipments leaving from eastern ports, there have been occasions recently when the harbor management was unable to furnish pier space to all applicants.

San Francisco's central position on the Pacific Coast and its early start in the shipping business has led to the establishment of many world wide steamship operations with head offices here, and they have been followed by the head offices of world trade banks and marine insurance companies. Practically all of the marine insurance on the Pacific passes through San Francisco channels.

Port of Oakland

THE City of Oakland portion of Oakland harbor comprises some 19 miles of waterfront, two-thirds of which is owned by the municipality, and which extends from the Oakland approach to the San Francisco-Oakland Bay Bridge, through the Outer and Middle Harbors, up the nine mile long Oakland estuary now called the Inner Harbor, to the Oakland Municipal Airport, all under the jurisdiction of the Oakland Board of Port Commissioners, who are Claire V. Goodwin, President; Stanley A. Burgraff and Dudley W. Frost, Vice Presidents, and James F. Galliano and H. W. Estep, commissioners. Arthur H. Abel, Port Manager and Chief Engineer, is also President of the American Association of Port Authorities.

The Outer Harbor is that section directly facing the Golden Gate and lying between the Oakland approach of the Bay bridge and the Southern Pacific pier. Here are located the big Oakland Army Base, and the Port of Oakland's Outer Harbor Terminals. The Seventh Street and Fourteenth Street Units of these Outer Harbor Terminals comprise modern steel and concrete terminal buildings, as well as wharves and piers capable of handling all types of ocean going vessels in the coastal, intercoastal, and foreign trade.

Within the area is also an oil pier, the large plant of the Albers Milling Company, and the facilities of the General Petroleum Corporation, Rosenberg Brothers, Libby, McNeill and Libby, National Container Corpora-

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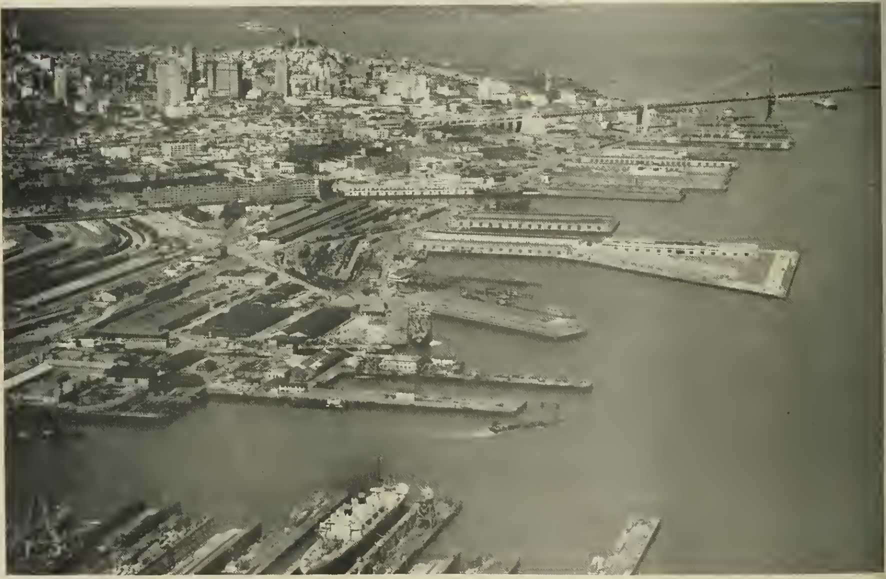

PORT OF SAN FRANCISCO

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Arthur H. Abel, Port Manager and Chief Engineer of the Port of Oakland and the 1950 President of the American Association of Port Authorities.

tion, MacMillan Oil, Western Vegetable Oil Company, and others.

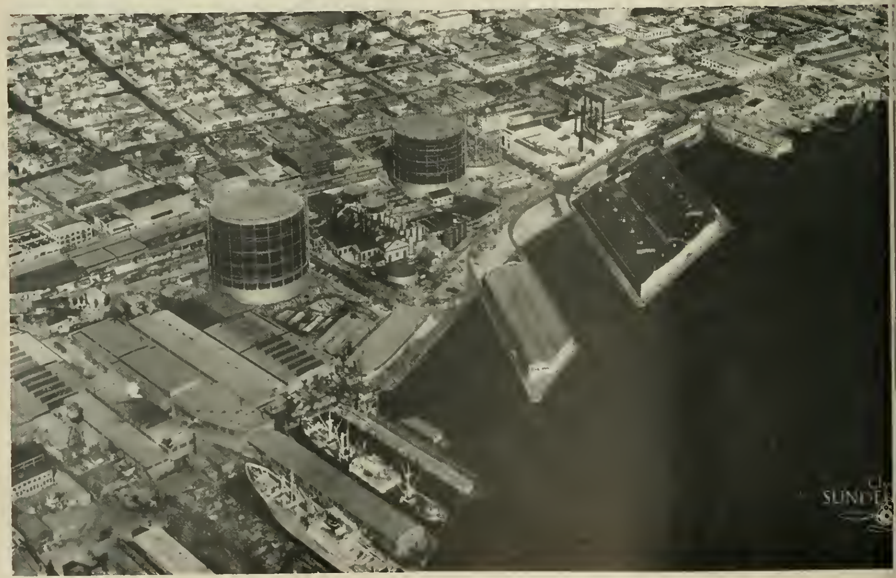
The Middle Harbor, which is located between the Southern Pacific Pier and the mouth of the Oakland Estuary, is now the location of the $100,000,000 Oakland Naval Supply Center, one of the largest Naval Supply facilities in the world.

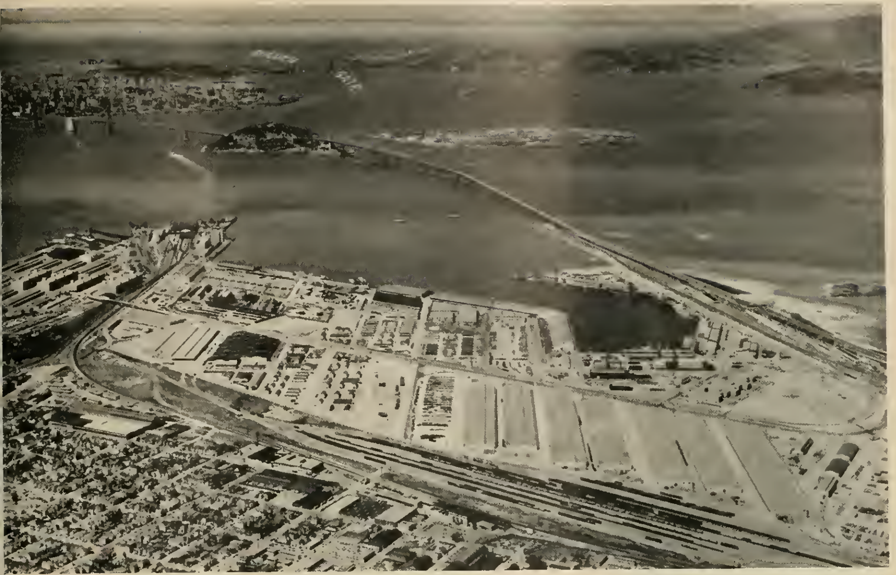
The Inner Harbor estuary is between 800 and 1000 feet wide for five miles of its nine mile length, and separates Oakland on the north and Alameda on the south. Along this waterway the Port of Oakland and private interests have many valuable harbor facilities, including the Moore Drydock Company, Oakland Dock and Warehouse Company, Howard Terminals, the grain elevator and grain shipping facilities of the Ralston Purina Company among private plants, and the Port of Oakland's Grove Street Terminal at the foot of Grove Street, the Inland Waterways Terminal at the foot of Webster Street, and the Ninth Avenue Terminal at the foot of Ninth Avenue.

The Grove Street Terminal comprises the Grove Street, Market Street and Clay Street piers and quay wall areas with a combined berthing space of 3613 linear feet and transit shed area of 249,820 square feet. Oakland's wholesale and warehouse district, a great many manufacturing, industrial, and commercial concerns, as well as the downtown business districts, are within a short distance from these piers and transit sheds.

The Port of Oakland's Ninth Avenue Terminal, which is located on Brooklyn Basin in the estuary, is also in close proximity to the business district, Lake Merritt, and the central and East Oakland residential districts. It is in the center of a highly industrialized area of manufacturing and allied concerns, and, like all the other terminals, has full rail and water facilities. This terminal provides berthing space of 2278 linear feet, transit shed area of 91,000 square feet, and open pier area of 320,220 square feet. It also includes an adjacent area which is

One of Port of Oakland facilities is the Grove Street Terminal on the Inner Harbor. Principal pier buildings are shown in the Picture.





The port facilities of the Port of Oakland are divided. Outer Harbor Terminal faces the Golden Gate and consists of pier buildings shown in the center of this picture. The Southern Pacific's ferry "Mole" extends upward in the picture toward Yerba Buena and Treasure Island in the middle of the Bay. To its left is the Navy's Oakland Supply Center, largest such facility in the world. The great sheds and other buildings in the foreground are the Army's Supply and Cargo Handling Base. The Oakland Outer Harbor is well placed in conjunction with these facilities and with the great terminal plants of Libby, McNeil & Libby and Rosenberg Bros.

utilized for the handling of lumber and other bulk commodities.

The Oakland Board of Port Commissioners recently awarded a contract for constructing the new Embarcadero along the Inner Harbor paralleling the Eastshore Freeway. The contract calls for the improvement of the Embarcadero from Fifth to Nineteenth Avenues south of the Freeway and of Tenth Avenue from the Embarcadero to the Ninth Avenue Terminal, thus providing a much needed traffic artery for the adjacent area, piers and industrial plants.

The Embarcadero is one of a number of long planned projects by the Board of Port Commissioners to improve this portion of the Inner Harbor and make it more accessible to industry located in East Oakland, southern Alameda County, and the Santa Clara and San Joaquin Valleys. The second unit of the Embarcadero, the link from Fifth Avenue to Fallon Street, across the Lake Merritt Channel, will follow in the future, thus connecting the roadway with the downtown area south of the Freeway.

Among the other facilities along the Inner Harbor the Inland Waterways Terminal at the foot of Webster Street has berthing space of 929 linear feet and shed area of 32,320 square feet. It furnishes transbay barge service for jobbers supplying California interior points and provides shippers with a means of having their products trans-shipped on ocean going vessels.

Two smaller municipal piers at Livingston and Dennison Streets, and the Oakland Yacht Harbor at the foot of Nineteenth Avenue are also Port facilities.

At the upper, or eastern, end of the Estuary is an artificial tidal canal connecting the Estuary with a natural basin, known as San Leandro Bay, within which the Board of Port Commissioners plans eventually to provide another large shipping terminal development supported by a large industrial area—200 acres of which has already been reclaimed.

The Port of Oakland has a total of 1,540 acres in the North Harbor area, located north of and adjacent to the San Francisco-Oakland Bay Bridge and fronting on San

Francisco Bay, which is reserved for future Port development.

All the offshore shipping facilities constructed by the Board of Port Commissioners are of steel and concrete construction, equipped with automatic sprinklers for fire protection which provide shippers with maximum safety for their cargo and low insurance rates.

Port of Richmond

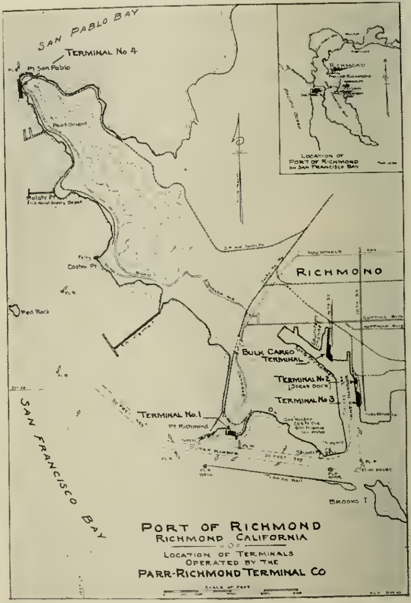
Fred D. Parr,
President,
Parr-Richmond
Terminal Co.

THE Port of Richmond on the east side of San Francisco Bay has facilities for the bulk handling of many major commodities and consists of a number of terminals extending along several miles of shore line. Apart from the main loading facilities of the Standard Oil Company and the Navy's Oil Supply Depot at Molate Point, the terminal facilities of Richmond are operated by the Parr-Richmond Terminal Company in five main terminals numbered 1 to 4 plus the Bulk Cargo Terminal.

Terminal No. 1 is a concrete structure designed for the handling of general cargo and bulk petroleum and is located on the Outer Harbor of Richmond.

Terminal No. 2 is a sugar dock and it, together with No. 3 and the Bulk Cargo Terminal, are on the Inner Harbor. No. 3 is specially equipped for handling cotton, canned goods, general cargo and petroleum, as well as copra and vegetable oil, processing plants for which are nearby.

Terminal No. 3, located on Inner Harbor, Richmond. Reinforced concrete, sprinklered facility, handling general cargo including cotton, canned goods, and petroleum. It is also principal copra port for Contra Costa County and vegetable oil processing plants.



In the Bulk Cargo Dock, in addition to stockpiling facilities for full cargo lots of dry bulk cargoes, there are facilities for heavy lifts of up to 150 tons.

Terminal No. 4 is several miles up the Bay at Point San Pablo and is used primarily for the handling of petroleum products, packaged goods, vegetable oil and molasses. It is also the fish reduction headquarters on San Francisco Bay.

Richmond is an industrial city with many important plants, including Standard Oil, California Research Corp., and the Standard Oil Refining facilities; also, Ford Motor Company's plant and the Pullman Company's shops.

Fred Parr of the Parr-Richmond Terminal Company is credited with a major part of the industrial development and port development of the City of Richmond.

Port of Redwood City

THE Port of Redwood City is the most southerly deep-water Port on San Francisco Bay, being located midway between San Francisco and San Jose. Although the Port was in existence as far back as 1850, it was not until 1936, when the people by charter amendment created a Port Department with its affairs to be administered by a Board of Port Commissioners and approved a bond issue for $266,000, that the Port really commenced to develop and function as a Port for the accommodation of deep-draft ocean-going vessels.

In 1936 the channel was deepened to 27 feet, m.l.l.w., with a width of 200 feet. A turning basin 1800 feet long and 700 feet wide was provided. Wharves, transit sheds and rail facilities were also provided. The existing federal channel project calls for a depth of 30 feet and width of 300 feet.

Present shore facilities of the Port consist of the following:

Port Area—83 acres.

Berthing Space—1,275 feet.

Transit shed space—54,000 square feet (sufficient to accommodate 13,000 tons of canned goods at one time).

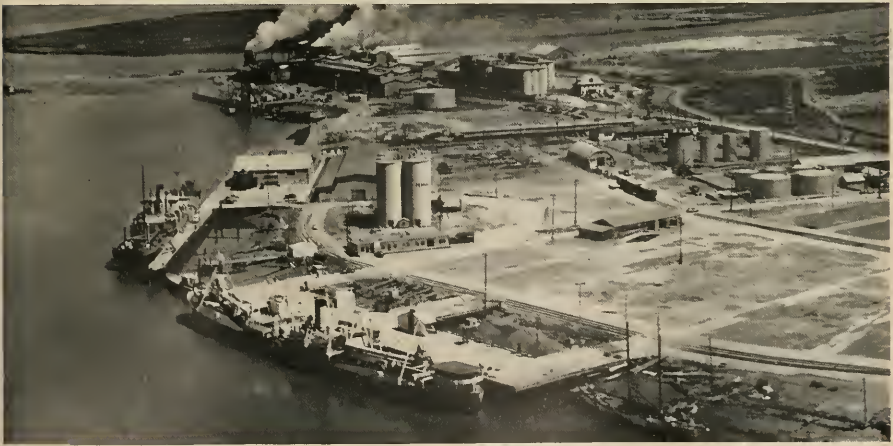
Uncovered dock space—63,000 square feet.

M. D. McCarl, Port Manager, Redwood City.

Uncovered improved area for cargo (rock surfaced, graded and drained)—10 acres.

Railroad tracks—transit sheds, uncovered docks and

The S.S. "Santa Cruz Cement", at Redwood City's Wharf No. 1, loading a full cargo of approximately 8,000 tons of bulk cement, while at Wharf No. 2 the steamship "Phopho" is ready to discharge 9,000 tons of bulk gypsum. These two products, together with canned and dried fruit, are the major commodities at the Redwood City Port but will soon be augmented by the addition of bulk salt.



uncovered improved areas all serviced by tracks, with hold tracks sufficient to take care of several hundred cars at one time.

Railroad connection—Southern Pacific Company.

Highways—Four-lane highways from Santa Clara Valley points.

Running time of trucks from principal canned goods and dried fruit packing plants in San Jose, Santa Clara, Sunnyvale and other Santa Clara Valley points—from 30 to 45 minutes.

The Port's tributary territory includes the rich Santa Clara and Salinas Valleys and the lower San Francisco Peninsula. In this territory, according to the Industrial Market Handbook of the United States, are located nearly one-fifth of the establishments engaged in the processing of fruits and vegetables in the entire State of California. From an economic standpoint all of canned goods and dried fruit tonnage, cement, salt and other products of the soil and manufactured articles which are produced in this area and shipped out through the Golden Gate by water should be shipped from the Port's facilities or from private facilities located in Redwood City Harbor.

Included among the Port's lessees or concerns with whom the Port has contractual relations are the following well known concerns:

Standard Oil Company of California, Richfield Oil Company, Union Oil Company of California, Shell Oil

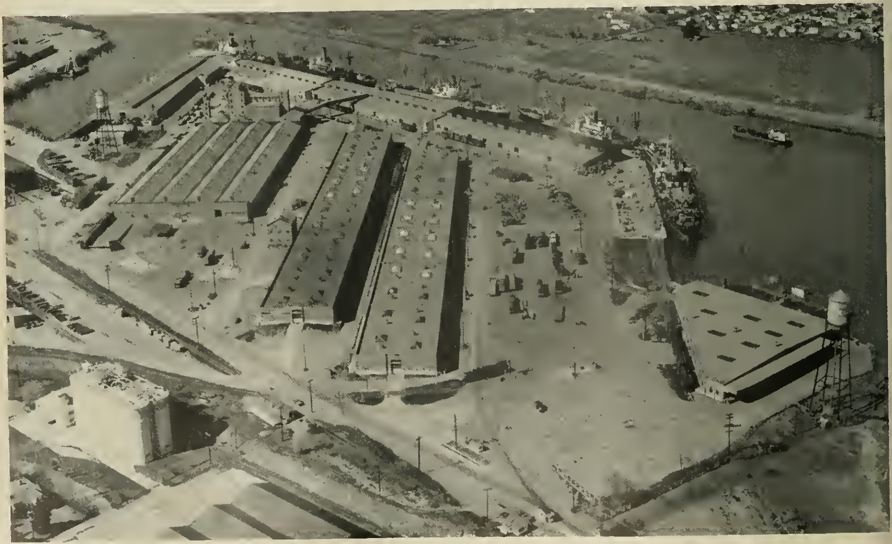
(Please turn to page 80)

Port of Stockton

ONE of the most unique seaports on the Pacific Coast is "California's Inland Seaport," as the Port of Stockton is known. So called because of its location 77 nautical miles directly east of the Golden Gate, the Port of Stockton is the consolidation and distribution center of California's Great Central Valley Region. Within this area are five of the top ten agricultural producing counties of the United States. The City of Stockton is the intersection point of the three main transcontinental railroads that serve Northern California, more than 150 truck lines and several major highways.

When the Port of Stockton was first opened to commercial traffic, in February of 1933, its physical facilities consisted of two transit sheds, three warehousing units, and limited amount of trackage of the belt line railroad. Today, these facilities have grown to include six transit sheds representing 400,000 sq. ft. of storage space, twelve modern warehousing units representing 182,400 sq. ft. of

Port of Stockton showing brick warehouses (center), grain terminal (left center), turning basin (right). View facing northwest.



space, with a new 160,000 sq. ft. warehouse being constructed this year; a grain terminal featuring a bulk loading conveyor belt to water's edge, berthing accommodations for eight vessels of the largest American Merchant Marine type, cement and molasses storage areas, a lumber distributor's terminal and cotton compress and storage facilities. In addition, there are 10.2 acres of open paved storage area and several hundred acres of industrial property awaiting development.

The Stockton Deep Water Channel is maintained to a minimum bottom width of 250 feet and a minimum depth of 32 feet at mean lower low water, permitting regular passage of even the largest of ships. The largest ships presently operating in the American Merchant Marine cargo service are the C-4 type of vessels, many of which regularly serve the Port of Stockton in the intercoastal trade.

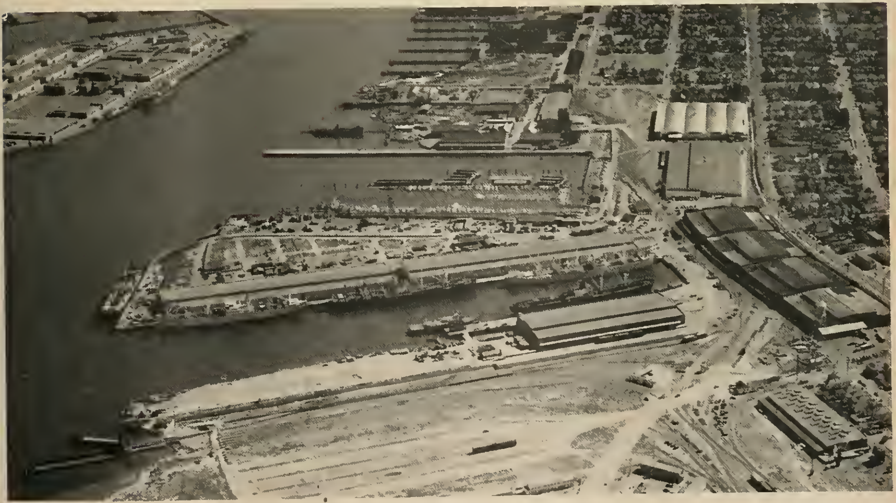
A few of the main commodities that daily move from this "market basket of the world" are canned goods, dried fruit, farm machinery, wine and brandy, olives and olive oil, montan wax, (the hardest known wax produced in the U. S.) powdered and evaporated milk, fibre cartons, wool, barley, pencil slats, barrels of cherries, drums of prune juice, dried beans, cotton and cotton linters.

Inasmuch as 1949 was the first time in its entire 17 year history that the one million ton mark was bettered, the Port of Stockton is now in the "Major Seaport" classification of deep water terminals on the Pacific Coast. Ships loading or discharging cargo at the Port during the past year averaged 2,070 tons each, a good mark for a terminal of any size.

Elmo E. Ferrari,
Director of the Port
of Stockton.

Alameda's Encinal Terminals

This well arranged terminal is located on the Alameda side of the Oakland Estuary and has elaborate warehouse accommodations and outdoor storage areas. Encinal is one of the principal fruit loading facilities in the Bay Area.



The Outports on San Francisco Bay

THE advantage of a concerted, rather than an unbalanced, program of port publicity for the ports on San Francisco Bay has prompted the California State Senate, whose interest stems from the state ownership of San Francisco Harbor, to appoint a committee which is charged with making a comparative study of operations, facilities and trends in Eastern and Gulf ports for the purpose of applying the knowledge gained to the ports on San Francisco Bay.

The foregoing pages described the facilities in the major ports on the bay. The following pages contain some preliminary observation of the Senate Committee on the outports of the bay and is prepared by Frank E. Feliz, Executive Secretary of the Senate Committee. It does not report any official findings or conclusions of the committee which will make its final report to the 951 State Legislature.

Frank E. Feliz
Executive Secretary
of the Senate
Port Authority
Committee.

DURING the past two decades the pattern of traffic in the San Francisco Bay metropolitan area has changed materially. While formerly most of the bay area shipping traffic was centered in the City of San Francisco, it has gradually been disseminated until a score of outports or landings now participate, and there are times when the tonnage of such ports exceeds that of San Francisco.

One factor responsible for this distribution is the phenomenal increase in population and manufacturing in the bay area. Another is the growth of the large ports of Oakland, Richmond, Alameda, Redwood City and Stockton, but particularly Oakland.

Beginning about twenty years ago truck traffic into the ports has replaced bay and river traffic. Now there is some indication that the dispersal of industrial activity and the construction of efficient port facilities at many points around the bay may influence reversal of the decline in inland waterway commerce, and so restore traffic on the inland waterways. At all events there is no doubt that the billion dollars worth of new factories within the past ten years decentralizes bay traffic, and the waters of the bay are sure to see an increasing number of vessels to these outports, whether they be bay and river craft or the offshore type. An important factor will be the ability of the outports to justify terminal rates.

Other than the big city ports mentioned above, the numerous deepwater terminal points provide a traffic volume which would be the envy of many a big city.

Three deepwater terminal points between major bay waters and Stockton are Antioch, Pittsburg and Port Chicago. Antioch has waterborne connections for the largest paper and strawboard mills west of Chicago, in addition to fruit and vegetable canneries, packing houses and shipyard facilities.

Pittsburg is living up to its Eastern namesake, with one of the West's major steel producing plants operated by Columbia Steel, subsidiary of U. S. Steel, the giant Dow Chemical plant, and other factories in rubber, asbestos and chemicals, moving materials and finished products off and on its terminals.

Port Chicago is one of the U. S. Navy's major Pacific Coast munition depots, and also is the location of a large chemical plant and two oil refineries.

The ports can be generally segregated into those able to accommodate deepdraft ocean-going vessels and those ports in which traffic is limited to barge or shallow-draft vessels, such as Sacramento (at present), Petaluma, Alviso, Napa, Sausalito, San Rafael and other sloughs, creeks and landings.

The upper San Francisco Bay terminal facilities also include about 44 piers and wharves, 21 of which are at the Mare Island Navy Yard west of Vallejo and the channel leading to Napa. Four wharves on San Pablo Bay include Pinole Point and Hercules, used for loading explosives to barges or lighterage to vessels in the explosive anchorage areas. Point Davis at Oleum is the Union Oil wharf terminal, while the Selby wharf handles ores inbound and refined products outbound for the giant smelter and refinery of the American Smelting and Refining Company.

Nine water terminals on the south side of Carquinez Strait and Suisun Bay lie between Valona on the west and Avon, the Associated Oil wharf facility. Four of the nine are oil handling terminals, one located near Port Costa, two at Martinez and one at Avon.

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Marine Exchange Installs Radar For Bay Control

BESIDE the old long glass in the Marine Exchange lookout station located at the end of Meiggs Wharf at the foot of Hyde Street, San Francisco, stands a symbol of this modern age of electronics. It is the indicator unit of the new Westinghouse MU-1 radar set that was recently installed to assist the lookouts in their never ending watch of the ships entering and leaving the Golden Gate. The old glass is fine when the weather is good, and it will permit the lookout to read the names of vessels as they come under the Golden Gate Bridge 2.6 miles away, but even its highly polished lenses are of no avail

The Marine Exchange is unique among such institutions in that it provides services to shipping interests in all of the ports of San Francisco Bay. Among such services are the following:

Telephone reports to all concerned day and night on the arrival and departures of vessels.

Reports on sea and weather conditions for arriving and departing ships and harbor equipment provides the press with reports of ship movements.

Tabulates ship movements by type and flag for members and press.

Records charters on bulletin board in office.

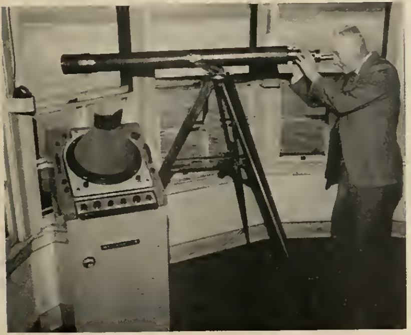
Through membership committees investigates industrial problems and enables members to be heard in legislative matters; as an example. the recent state sales tax exemption on ship equipment.

Organized publicity and community approval of World Trade Center, Foreign Trade Zone, School of World Business, Bay Ports Traffic Bureau and many others.

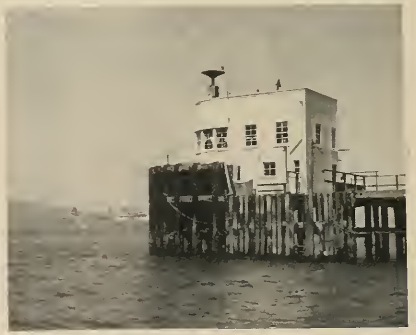
The Exchange is a watchdog for western maritime interests.

M. A. Cremer
Secretary-Manager,
Marine Exchange.

Old and new meet in Marine Exchange—Since 1901, the 50-power telescope, below, has been used to identify ships entering or leaving San Francisco Bay. Edward F. McCarthy, assistant manager in charge of San Francisco Bay Area lookout stations for the Marine Exchange, can now also use the Westinghouse type MU-1 radar equipment, the indicator-console unit of which appears at the left.



Grim Alcatraz Island appears in the left background of this photo of the Marine Exchange lookout station at the end of Meigg's Wharf, foot of Hyde St., San Francisco. Atop the lookout station may be seen the mushroom-like "Radome" housing of the antenna for the new radar equipment recently installed to enable speeding of important ship information to Marine Exchange members.



when the fog rolls in or a storm blows up. The radar however ignores the weather and provides an accurate and reliable determination of the position of any object within its range regardless of fog, storm or darkness.

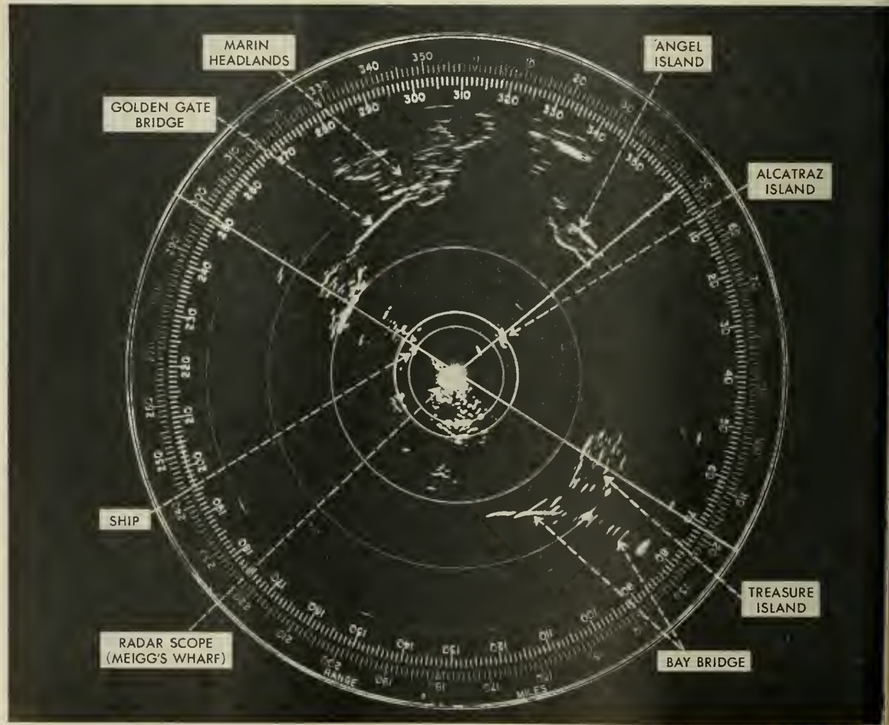
The installation of radar at the Marine Exchange station is intended solely for harbor surveillance at the present time, and it will provide a great deal of valuable information about ship locations and movements during periods of bad weather that will expedite work in the harbor. Docking orders and mail can be more readily and surely dispatched to incoming vessels by the Marine Exchange launch *Jerry Daily*, and information about ships can be transmitted more rapidly to owners, operators, suppliers, shipyards, governmental and other agencies.

With its antenna located in a weather proof radome on top of the lookout station about 40 feet above the water, the radar equipment can "see" vessels outside of the Golden Gate as well as in the harbor north of the Bay Bridge. The hills of San Francisco as well as Yerba Buena Island prevent a view of the harbor south of the bridge.

In operation, the radar practically draws an animated map of the area around it. This map appears on the face of a 12½ inch cathode ray tube—the same type as used

(Please turn to page 66)

Radar Scope view of San Francisco Bay, below, was taken while the new Westinghouse MU-1 marine radar set of the Marine Exchange, Inc., was set on the four mile range. Small blob of light at the center of the concentric rings marks location of the observer at the scope. Starting at approximately the 310-degree mark on the outer scale and proceeding clockwise, the Golden Gate Bridge is seen extending to approximately the 340° mark. Patches of light at the lower end of the bridge are high spots on the San Francisco mainland, while those at the upper end are headlands on the Marin County side. Alcatraz Island appears on the north marker line (extending from the center to the zero-degree mark on inner scale, where the one-mile circle intersects that line.) The San Francisco-Oakland Bay Bridge is seen beginning just outside the two-mile circle at approximately 165 degrees outer scale and arcing to the right to intersect the four-mile circle at 130 degrees. Patches of light north of the center of the Bay Bridge mark Treasure Island. The innermost circle represents the variable range marker which intersects the target—a vessel—at 251 degrees from true north and seven-tenths miles distant.



The Coast Guard in the Bay Area

Sea Safety Stems From Here

THE underlying concept of all Coast Guard operations in the Bay Area, as well as elsewhere, is marine safety and the safety of life at sea. This concept has two sides—the "before" and "after," or preventive and rescue.

Preventive functions comprise those endeavors which seek to minimize shipboard accidents and irregularities, both by various inspections of the vessel and its equipment, and the competency examination of marine personnel. In the materiel sense, this preventive action starts with the building or conversion of the vessel itself, and goes through various stages of drydock inspection, annual servicing and inspection of lifesaving, fire fighting and other equipment essential to safe navigation; and the establishment and maintenance of navigational aids.

Recently under review by the San Francisco Marine Inspection Office of the 12th Coast Guard District were the conversion plans of the *General M. C. Meigs*, an 18,000 ton wartime troop transport. This government-owned vessel is to be converted to peacetime safety standards, under private contracts; and to check conformity to these, attention must be given such matters as stability, water-tight compartmentation, fire zones, bilge systems, ventilation, accommodations, etc. Similar review of plans are made whether the vessel is a tank barge or a limited coastwise passenger vessel.

During the past year, more than 300 vessels (freighters, tankers, ferries, etc.) underwent an annual inspection of safety aspects of their hull, machinery and equipment. Practically the same number were inspected on drydock. Close to 1000 inspections were made of all types of repairs to vessels. About 200 fire and boat drills were conducted, and an equal number of load line inspections were made—particularly to tankers at the oil docks in the Bay Area. Approximately 50 inspections were made of vessels carrying dangerous cargoes, such as dynamite, chemicals, etc.

All vessels over 15 gross tons carrying passengers or freight for hire are subject to safety inspection. Smaller vessels are not inspected and are unrestricted as to waters of operations and number of persons allowed on board. The safety approach to these vessels is through the Motorboat Act of 1940, which encompasses an educational program run by the Coast Guard Auxiliary. The Auxiliary, the loyal arm of skilled civilians, serviced small boatmen throughout the district, its courtesy and educational programs reaching more than 2200 owners—over 600 of whom are located in the Bay Area. Encouragingly, too, and perhaps significantly, violations of the Motorboat Laws showed a marked decline.

During the past year, the Marine Inspection, Licensing and Certificating Section issued more than 2000 Deck, Engineering, Radio and Motorboat Licenses. Of the 3000 seamen's documents given out during the year, about 1200 were original U. S. Merchant Marine Certificates.

Rear Admiral J. E. Stika, USCG, Commander, Western Area and Twelfth Coast Guard District. Says he: "No program we outline can be successful without wholehearted acceptance and cooperation on the part of those activities at which it is aimed. I have said many times, and I wish to reiterate that the great majority of the boating public as well as the shipping fraternity, does all in its power to make our work a pleasure, obviously agreeing with our belief that the surest main road to safety lies through a sustained and comprehensive education program."

Before the larger ocean-going inspected vessels are manned with qualified officers and seamen, Shipping Articles are entered into in the presence of a Coast Guard Shipping Commissioner. For the past 12 months period, 2600 crews were processed, comprising about 30,000 persons participating in "sign on" and "pay off" procedures. Coexistent with these activities, appropriate stocks of Official Log Books and Certificates of Discharges are furnished for use while underway. The effects of deceased and deserting seamen are maintained in the custody of the Coast Guard, and sometimes these effects have unknown value—such as the $1800 left in a suit case, not long ago.

Moving along with the preventive or "before" side of the picture, aids to navigation play a prominent part in the safety of incoming and outgoing mariners. All vessels traversing the Bay Area—an area encompassed by the Farallon Islands to the west; the East Brothers Island to the north; the Sacramento and San Joaquin Rivers all the way up to Sacramento and Stockton to the east, and Alviso Slough to the south—are confronted with over 400 lighted and over 120 unlighted aids to navigation designed to prevent groundings, collisions and to provide safe anchorage if need be.

On the rescue, or "after" safety side, the facilities of the Rescue Coordination Center come into play. These include all the innovations of modern communications, nine aircraft stationed at the Coast Guard Air Station, Mills Field; over 125 floating units, including four weather patrol cutters: the *Taney* (WPG-37), a 327-foot Secretary-class cutter, the *Chautaugua* (WPG-41) and *Escanaba* (WPG-64), both 255 feet, and the *Gresham* (WAVP-387), a 311-foot converted seaplane tender; five major shore units that include the operating base on Government Island, Alameda, Yerba Buena Island Buoy Depot where buoys are serviced and routine maintenance on other navigational aids is done, the lifeboat stations at Fort Point and Golden Gate, and, as mentioned before, the Air Station at Mills Field, South San Francisco.

An example of this "before" and "after" safety con-

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Army Transport Still Has Big Job To Do

Inland Traffic Plus Cargo Handling Require Able Management

Major General James A. Lester
Commanding General
San Franciscso Port of Embarkation

A NEW name for a major division epitomizes the change in the mission of the San Francisco Port of Embarkation occasioned by the transfer of Army ships to the Military Sea Transportation Service, a unification move.

With the turnover of the Port's 20 vessels, Water Division, SFPE, changed its name to Terminal Operations Division.

The Terminal Operations Division, headed by Lt. Colonel William M. Palmer, has two branches. The two encompass the entire current maritime operations of the Port commanded by Major General James A. Lester.

Operations Branch does what its name implies. It operates the Port terminals at Fort Mason, Oakland Army Base, Stockton and Long Beach, loading and unloading cargoes from ships provided for Army use by MSTS; plans stowage; prepares manifests; directs the work of Civil Service longshoremen; and supervises that of the commercial contract terminal and stevedore firms which handle most of the Army cargo and who incidentally draw their labor through the International Longshoremen's and Warehousemen's Union.

The work now being done is the same as that performed before the merger, except that the Port completes its job when the hatches are closed and MSTS takes over to navigate the ship to its destination. Lt. Colonel Thomas R. W. Skinner heads Terminal Operations Section.

The second branch is the Harbor Craft Branch headed by Major Thomas M. Thompson.

The transfer of ships did not involve the Port's harbor craft fleet, consisting of large and small tugs, ferry boats, and barges. These were considered part of a terminal operation and part of the Army's responsibility for inland waterways operations.

The tugs continue to move ships into and from their berths at Port terminals and occasionally do a similar job for the Navy too. Agreement for joint use of harbor craft facilities has been in effect more than a year.

The branch embraces the Marine Superintendent's Office, corresponding in functions to a port captain and headed by Captain Robert E. Voortmeyer; Major Michael D. Isrin heads the Maintenance and Repair Section shop, centered at Dock 1, Fort Mason; a Small Craft Accountability Section, which handles supply, inventory and other paper work; a Decommissioning Section, which is engaged in laying up surplus boats; and the 9206 TSU-TC Harbor Craft Detachment, which operates the wet storage bases for laid-up craft at Mayberry Slough near Pittsburg.

Aside from transfer of responsibility of operating, manning, storing and maintaining the ocean fleet, Port operations continue as usual.

Through Oversea Supply Division it directs the flow of all Army support and relief cargoes sent to the Pacific area.

Through Troop Movement Division it handles the in and out flow of military personnel, dependents and government civilians between the mainland and the Pacific.

Through Transportation Division it receives, consolidates and forwards large quantities of freight received from or turned over to rail and highway operators. And through Terminal Operations Division it carries on its terminal work in undiminished volume.

Honolulu Fireboat

Another Bowes Beauty

MANY waterfront fires in the last two or three years causing millions of dollars in losses (including the disastrous fire at Texas City, the Grace Line Pier in New York, the railroad piers in Weehawkin, N. J., and a great many more) have been responsible for the interest various city officials have given to the necessity of providing modern waterfront fire protection. Adequate protection has also been necessary to prevent the skyrocketing of insurance rates.

The new fireboat for Honolulu Harbor is one of the larger sizes of the new Bowes Type Fireboat. In general her characteristics are similar to the three just built for Philadelphia, the Port of Houston and Israel. The Honolulu fireboat is ten feet longer to provide the space for additional pumping machinery to give her a capacity in excess of 9000 g.p.m. at 150 p.s.i. The last four boats of this type were 6500 g.p.m. at 150 p.s.i.

General characteristics are as follows:

Type	Single screw Diesel Fireboat
Construction	Welded steel-Longitudinal System
Classification	American Bureau of Shipping National Board of Fire Underwriters
L. O. A.	87 feet 0 inches
L. B. P.	82 feet 1 inches
Breadth Molded	19 feet 0 inches
Depth	11 feet 2 inches
B. H. P.	660 @ 1800 rpm with 4 to 1 reduction
Draft aft	7 feet 0 inches
Draft forward	3 feet 6 inches
Speed	13.43 knots (15.46 M P H)
Water Capacity	9000 gpm at 150 psi
Foam Capacity	320,000 gallons

The form in general is a modified V, having a large radius at the turn of the bile while the forward sections are U shaped. The drag of the keel is about 3 ft. 6 in. which, with a large balanced streamlined rudder, affords exceptionally fast handling ability. This rudder is operated by a C. H. Wheeler electro-hydraulic gear with hand operation combination.

Using well rounded sections forward, both the forefoot and the bow, permits the fireboat to be forced up on mud flats or ice and, at the same time, enables the vessel to release itself and back off. This would not be possible with a bar keel and sharp sections forward. There is no stem bar—the bow is well rounded to prevent damage when the fireboat is used as a tug to push a vessel.

The transom stern has large radius corners at each side; this—with the double continuous guards—permits the vessel to be operated astern quickly in times of necessity without any chance of being hung up on piling, etc.

As we go to press Naval Architect Bowes advises that the contract for the new Honolulu fireboat has been awarded to the Albina Engine & Machine Works, Portland, Ore., by the Honolulu Board of Harbor Commissioners.

Thomas D. Bowes, Naval Architect on Honolulu fireboat.

The all welded steel construction is on the longitudinal system. This type of construction with the deep frames and bulkheads enables the fireboat to withstand the severe service around wharves, piers and vessels.

The vessel has bunker capacity for over thirty hours of continuous operation at full power. Forward and aft of the bunkers there are large bow and stern trim tanks that will permit a quick change in trim. The vessel's draft can be reduced aft nearly a foot and a half when necessary to operate in shoal water.

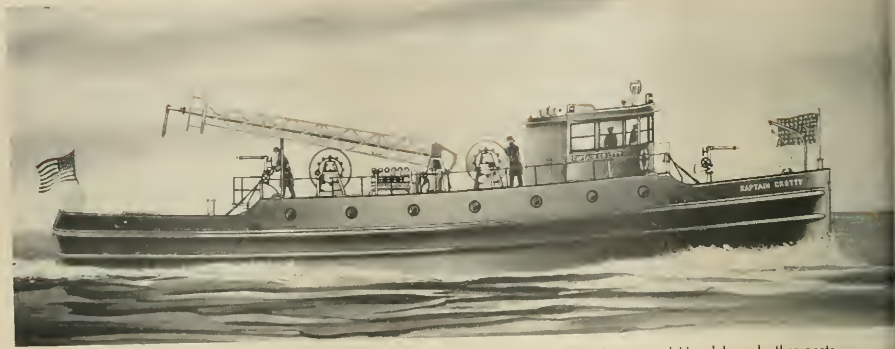
The machinery layout consists of a General Motors QUAD developing 660 B.H.P. at 1800 rpm for continuous operation and is fitted with a 4 to 1 reduction gear. The QUAD consists of four 6 cylinder engines and each one can be declutched from the propulsion gear and used to drive a 1500 gpm two stage De Laval fire pump. In addition there are two 6-cylinder Model 71 G.M. engines, developing 165 B.H.P., each fitted with a 1500 gpm De Laval pump.

With this arrangement of power units it is possible to use the QUAD to propel the fireboat to the fire and when she arrives, if not necessary to maneuver, all four engines of the QUAD can be declutched from the propulsion gear and used to drive four pumps so that with the two 6-cylinder engines, six pumps can be operated with a combined capacity of over 9000 gpm.

If the fireboat cannot be made fast at the pier and must be held in place with its own power, one pump can be declutched and a single engine used for this purpose. A single engine will give this fireboat a speed of nearly 8 knots.

If this is necessary only 1/6 of the pumping capacity is lost while a twin screw fireboat of the same size would lose ⅓ of its pumping capacity.

The machinery, equipment and outfit on the Honolulu



The "Captain Crotty." Thomas D. Bowes has designed fireboats for Philadelphia, Houston and Honolulu and other ports, with still others under planning. The Honolulu boat is similar in profile to the "Captain Crotty," recently launched at Camden, N. J., for the Port of Houston. The overall length varies somewhat, the "Crotty" being 79 ft. 4 in. against 87 ft. for the Honolulu boat. The beam of each vessel is 19 ft. and the draft 7 ft.

Fireboat in general is as follows:

Main Engine & Pumping Unit	General Motors, Detroit, Series 71 Marine Quad Diesel
Independent Pumping Engines	General Motors, Detroit, Model 6-71 Diesel
Fire Pumps & Gears	De Laval Model 2 ks 6/5
Steering Engine	C. H. Wheeler, Electro Hydraulic
Air Compressor	Gardner Denver
Switchboard	Smith Meeker
Batteries	Exide-Ironclad
Bilge & Ballast Pump	LaBour
Fuel Oil Transfer Pump	De Laval IMO
Generator	Buda B D-6
Anchor Windlass	American Engineering
Hose Reels	Wirt & Knox
Monitors	McIntire Brass Works
Pilot House Windows	Kearfott
Exhaust Silencers	Maxim
Swivel Ells	Chicksan
Foam Pump	Viking
Foam System	National Foam Systems
Deck Scuttles	Baier
W. T. Doors	Julius Mock
Fire Tower Elevating Gear	Winfield Smith
Air Horn	Kahlenberg
Searchlight	Carlisle-Finch
Anchor	Danforth
Binacle	John E. Hand
Engine Controls	Adel
Shaft Bearings	Wood
Propeller	Ferguson
Stern bearing & Stuffing Box	Goodrich Cutless
Water Piping	A. M. Byers

A fireboat, to be the most economical to build and the most efficient to operate, should be completely functional in characteristics. Requirements might be stated as follows:

1. To fight fires on piers, docks, ships, etc.
2. To act as a central pumping station to help out land based equipment in isolated waterfront districts where fire mains and hydrants are not accessible.
3. To act as a tug to remove burning barges and ships from docks and out into the stream.

As most fireboats are based at a pier where there is a fireboat station with crew's quarters, there is no reason to duplicate such quarters on the fireboat, which in turn requires a larger vessel at increased cost and greater maintenance charges. In the great majority of services crew's quarters are not used, and are no more required than a trailer to follow a hose cart and pumper with crew's quarters.

The Honolulu fireboat is fitted with a special Bowes type manifold just aft of the firetowers. This manifold has swivel ball-bearing ells and shut-off valves. This design will permit eight 3½" hose lines to be run ashore from port or starboard, or from bow or stern. Each 3½" hose line can be fitted with a three-way adapter that will accommodate three standard 2½" shore fire lines. This means the Honolulu fireboat can handle 24 standard hose lines, about the same results as could be obtained with 12 standard shore pumpers, the difference being that the fireboat cannot pump the river or bay dry, while the land based equipment may be starved on the suction side, due to inadequate fire mains.

The Honolulu boat was designed by Thomas D. Bowes, M.E., Philadelphia Naval Architect, and it—as well as those he designed for Philadelphia, Houston, Israel, and others now on the boards—have been completely functional in characteristics. The single screw is to reduce the possibilities of propeller damage over twin screws. The single screw is also more efficient and costs less. In the case of the Honolulu fireboat she could make .71

(Please turn to page 87)

Naval Tank Cleaning Program

Transition from Black Oil to White Speeded

George B. Plant, President, Sopac Ship Maintenance,, Inc.

THE Sopac Ship Maintenance Co. of San Francisco and Long Beach is currently completing a major tank cleaning program for the U. S. Navy, which originated during the reactivation of Naval Tankers in 1947 and has continued into the present "moth balling" of these vessels.

The Naval Tanker Reactivation Program was brought about by a world wide shortage of tankers that caused rates to be increased approximately 50 percent and resulted in a petroleum shortage in many parts of the world, both to military and civilian operations. To relieve this situation the Navy obtained 57 T-2 tankers from the Maritime Commission reserve fleets and reactivated them with money from a special fund made available to the Navy by President Truman and was given a top priority by the Navy. Most of these vessels had carried black oil as their last cargo and, as the Navy's logistic requirements were for a substantial number of white oil vessels, it was necessary to clean a large number of these vessels. However, past experience had never warranted cleaning tankers from black oil to white oil products on such a scale in a short period of time, so no approved cleaning method for such an operation had ever been drawn up.

Sopac originally entered this program when they were awarded the contract for the cleaning of the cargo tanks on the U. S. N. T. *Mission Purisima* from black oil to gasoline in a one step operation. The terms of the contract called for the tanks to be cleaned according to the specifications laid down by Clyde Shrode, Manager of the E. W. Saybolt Company who are experts on petroleum inspection. As these specifications were stringent, Sopac obtained the services of Capt. H. W. Simonsen, a tanker consultant, to assist them.

Sopac, with the assistance of Capt. Simonsen, then set up a method of which the principal step consisted of cleaning the tanks with a chemical solution through the Butterworth System, utilizing high temperature and pressure while rigging the Butterworth machines within the tanks so that all the tank surfaces would be washed by a direct stream of hot chemical from the machines. During the final phases of tank cleaning on the *Mission Purisima* and while three other U. S. N. T.'s in the S. F. Bay Area were being cleaned, several other U. S. N. T.'s cleaned in another area arrived at their loading ports presumably clean and ready to load cargo. However, an inspection revealed that additional cleaning was necessary, which resulted in a delay in delivering much needed cargoes abroad. Upon hearing of this situation the Bureau of Ships and Chief of Naval Operations in Washington, D. C. dispatched Commander Walton N. Saunders and Commander David McCluskey to the West Coast to make an inspection and recommendations. As all four vessels being cleaned in the S. F. Bay Area were reportedly progressing very nicely, they first came to San Francisco to inspect these vessels to determine what cleaning methods were being used and what results were being obtained.

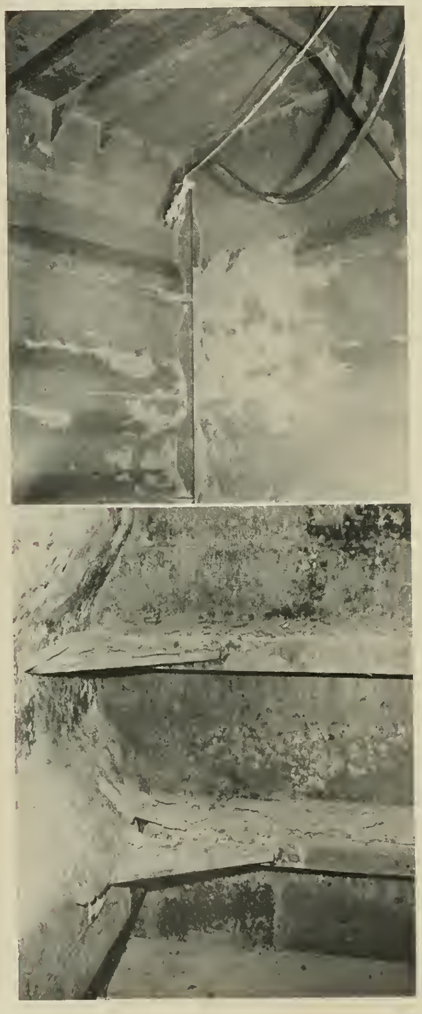
Captain H. W. Simonsen, formerly Assistant Port Captain for Hillcone and Deconhil Shipping Companies, whose services were obtained by Sopac to direct the tank cleaning program of the Navy. He was also a technical advisor to the Bureau of Ships and Chief of Naval Operations in preparing both the Tank Cleaning Manual and the Training Film.

As each vessel in San Francisco was being cleaned by a different method it was recommended that a comparison of results, cost, and the time element be considered in order to obtain an approved method of tank cleaning for future use.

A survey was made and it was decided that the "Sopac Method" was superior to the other methods used. However, the Navy felt that if "hot oil" were used in place of chemical the results might even be better. To definitely determine whether this were so, the U. S. Navy had an experiment performed on the U. S. N. T.

Mission Dolores by cleaning half of the tanks with "hot oil" and the other half with "hot chemical." The better of the two methods was to be adopted by the Navy as the method to be used in future cleaning of Naval Tankers from black oil to gasoline. The experiment determined that the Sopac "hot chemical method" was superior as well as less hazardous and less costly and was adopted as the "Navy Method." Commander Saunders and Commander McCluskey on their return to Washington were ordered to the Gulf Area to set up a program for cleaning the tanks of eleven U. S. N. T.'s. As experienced personnel for this type of cleaning was not available in the Gulf Area, George Plant, owner of Sopac and Captain H. W. Simonsen were asked to assist them in setting up tank cleaning facilities in Port Arthur and Beaumont, Texas; Lake Charles, La., and Mobile, Ala.

Top: A Butterworth machine within a tank, suspended by a wire fall from a hand winch on deck.
Bottom: A tank interior before commencing conversion. Note heavy scale.



Facilities were set up at Coastal Marine Service, Port Arthur and Lake Charles, Bethlehem Steel at Beaumont and Gulf Shipbuilding at Mobile. Sopac brought personnel down from San Francisco to supervise the actual cleaning of two vessels at Bethlehem, who were under the direction of J. H. Camp, present Manager of Sopac at San Francisco, and two at Gulf Shipbuilding Company Yard, who were under the direction of "Chick" Walker, present manager of Sopac at Long Beach, while Coastal Marine Service did the actual cleaning on four vessels at Port Arthur and three at Lake Charles under the guidance of Captain H. S. Simonsen. This tank cleaning program was under the direction of Capt. R. E. Wilson, Cdr. D. McCluskey, and Capt. Webster and Capt. Mellis, of the Bureau of Ships through a special field office set up at Port Arthur, Texas, which was under the command of Cdr. Walton N. Saunders, who was under the direction of the late Capt. Wells, Industrial Manager of the Eighth Naval District. Special priorities were established for this project and officers and men were obtained from the various Naval installations in the Gulf and from the Charleston Naval Yard.

The eleven ships in the Gulf were cleaned in less than two and a half months in spite of many mechanical breakdowns and delays, and loaded their scheduled cargoes and were on their way.

While the Tank Cleaning Program in the Gulf was under way the Navy decided that it did not want to be faced with a simiuar program in the future without making a record of the methods employed for future reference. A project was approved to add a chapter to the Bureau of Ships' Manual on tank cleaning and also to make a photo report of one of the cleaning operations to accomplish these ends. The actual shooting of the film for the photo report was done on one of the vessels cleaned at Port Arthur. After the film was developed the Chief of Naval Operations felt that it could be made into a training film very easily and would be more effective for training purposes. Therefore, Captain Simonsen, whose services were supplied the Navy through Sopac, was retained in Washington, D.C. as a technical advisor to the Bureau of Ships and Chief of Naval Operations in preparing both the Tank Cleaning Manual and the Training Film until June 1949. Both projects were prepared jointly by C.N.O. and the Bureau of Ships. The Manual, a Bureau of Ships publication, and the Training Film, a Naval Photographic Center Production, consisted of three parts: Part 1—Maintenance Tank Cleaning; Part 2—Conversion from Black to Diesel Fuel; Part 3—Conversion from Black Oil to Gasoline. The Manual, in addition to the text, consisted of many illustrations to clarify the

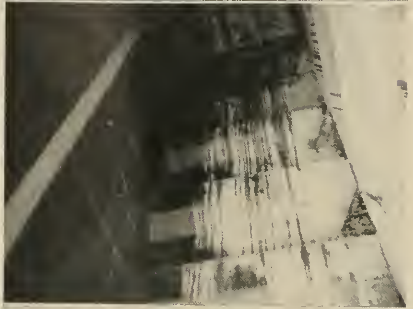
Top to bottom:

Butterworth machines are generally placed into a tank through the regular Butterworth openings; however, occasionally the machines are put in through the ullage openings.

A view of a tank section after being gasfreed and prior to commencing a conversion from black oil to clean products. Note heavy black oil.

Scale removed from a tank.

A tank interior after conversion from black oil to clean products.



technical points and to familiarize the pupil with the equipment involved. The Training Film included a number of animated sequences to describe the various cleaning cycles. Both the Manual and the Training Film have been approximately two years in the making. Sopac has been promised a print of the training film and hope to have it available for a review in the near future.

Next the Navy set up a Tank Cleaning Station at Norfolk, Va., and invited Sopac to participate in a program consisting of converting seven tankers from black oil to either diesel or gasoline in that area. By this time much of the confusion had disappeared as each vessel to be cleaned was prepared for the cleaning operation by the Norfolk Naval Shipyard with the best of equipment available to perform this operation at a minimum of time and cost and still obtain a quality job. These results were only possible through the earlier experimental and ground work that was accomplished by Sopac on the Pacific Coast and also by the part the Navy personnel played in assisting Sopac to carry out these operations, on the Pacific and Gulf Coasts. Sopac was especially grateful for the cooperation they received from the San Francisco Naval Shipyard at the inception and during the early phases of the program, particularly from Capt. Philip Lemler (now Vice-President of Todd Shipyard at Alameda) and members of his staff who were assigned to the Tanker Reactivation Program.

Captain Simonsen, upon completion of the Navy Program, left Sopac and has opened the Industrial Tank Cleaning and Maintenance Company of Martinez, California, making his experience available to the refinery, industrial and marine installations in that area as well as having available specialized tank and pipeline cleaning equipment, including vacuum tank trucks and the Olason System of tank cleaning.

Back to Mothballs

In December of 1949 the world's petroleum demands from the U. S. had leveled off somewhat and foreign countries were able again to either refine their own petroleum requirements or to transport the oil in their own bottoms. Therefore, the Navy tanker requirements were reduced making it necessary to "moth ball" a number of the U.S.N.T.'s for future emergencies. However, the Navy did not want to repeat the costly and time consuming experiences it had had a few years before during the Reactivation Program, so it was determined

(Please turn to page 86)

Electronic "Crew" Mans Robot Lightship

Automatic Safety Under Test

MANNED only by an electronic "crew," a robot lightship—first ever built for ocean duty—will soon be helping to guide shipping into the nation's busiest port.

The 91-foot-long, 215-ton, lightship "EXP-99" is nearing completion at Curtis Bay, Maryland. After a two-months dock trial at Curtis Bay, the lightship will be given further tests under actual service conditions near Scotland Lightship, one of three lightships marking the approaches to New York Harbor. These further service tests are designed to check the lightship's reliability before it is used as a replacement for a manned lightship.

With the aid of a remote control system developed by the Westinghouse Electric Corporation, a single operator at the Sandy Hook, New Jersey, Coast Guard Station will have complete control over the lightship's signalling system. Westinghouse also built the three generators that will supply electricity for the light, radio beacon, and the fog signal, and also supplied the controls for automatically starting the diesel engines that will drive the generators. One of the generators will be in operation continuously—the other two will be held in reserve.

Key to successful operation of the crewless lightship is the remote control system, called Visicode, developed by Westinghouse.

The Visicode equipment uses short radio waves to send orders from the shore station to the ship. There the waves are picked up by a receiver, executed by sensitive relays, and a return signal is sent to the operator notifying him that the proper equipment is operating.

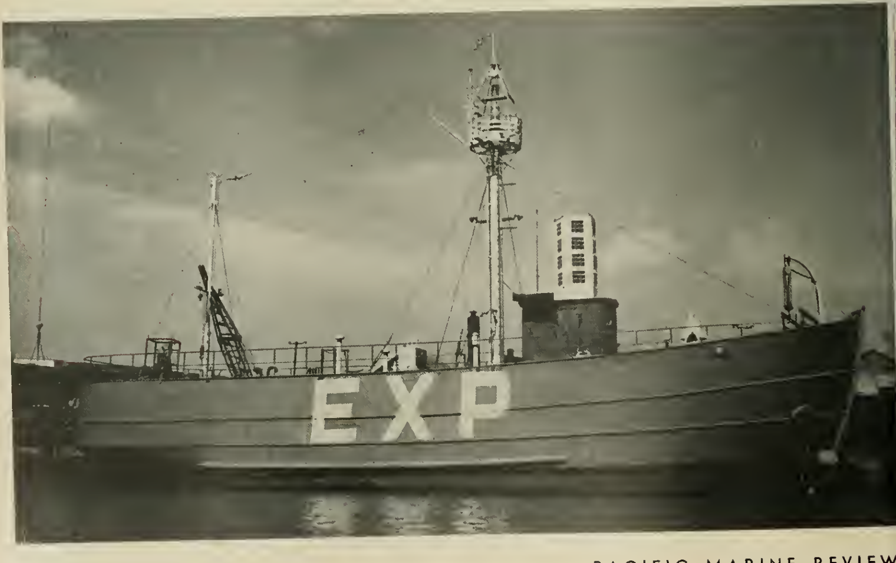
To check the system and see that it is in working order, the operator on shore pushes a selection button and electrical impulses are sent from a shore transmitter to a receiver on the ship. A white lamp on the panelboard lights up if the system is ready to operate.

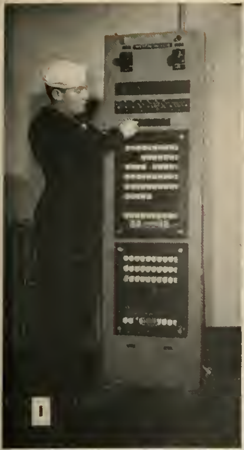
The operator then pushes a control button and a different series of impulses speed to the ship's receiver, where electrical relays take over, automatically starting a diesel engine, and in turn an electric generator.

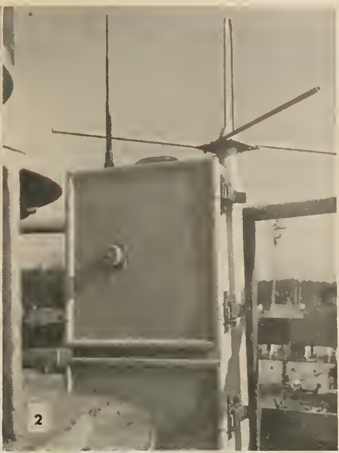
With the equipment operating satisfactorily, electrical relays start a transmitter on the ship sending a series of impulses back to the shore station and lighting a red lamp on the panelboard.

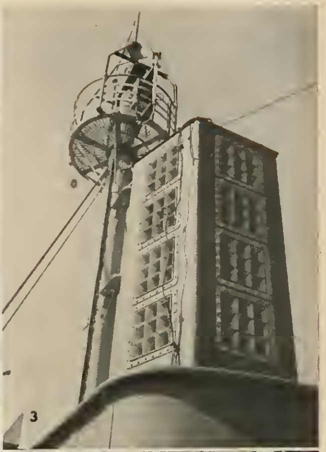
Should the equipment fail to start, a green lamp—lighted while the generator is idle—remains on. The operator then can turn on the second or third diesel-

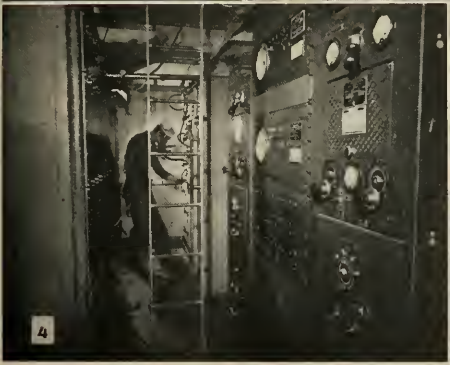
Profile view of Experimental Lightship 99.











1. Coast Guardsman Robert V. Dors, SN, of Poughkeepsie, N. Y., shows with the flip of a finger, how one man at a shore station can operate by remote control the various navigational aids on the Coast Guard's crewless Experimental Lightship 99. Through a system of relays on the panel, the operator may start or stop any one of the three Diesel generators aboard the lightship, start or stop the fog signal, time circuits, etc. When he presses a button, a series of coded impulses to the lightship results in automatic execution of the order.

2. A closeup of part of the radio installation on Lightship 99. The short vertical antenna at the left is employed with the radio receiver within the metal box. Under the remote control of a transmitter operated by one man at the shore station, the receiver places in operation a standby transmitter and receiver aboard the lightship in event of failure of the remote control transmitter and receiver for the fog signal, radio beacon and light. The antenna at the right is employed with the remote control equipment.

3. Up to the minute in design, this electronic fog signal on the lightship employs 180 individual speakers in a five-sided array, two sides of which are visible here. Such a loudspeaker assures a maximum projection of sound, giving the mariner an "all around" warning. Shown also in this view from the starboard bow, are the beacon light atop the masthead, radio antenna for remote control from shore, and radio beacon antenna.

4. The electronic "crew" that will man the lightship is shown here in this below-decks view.

5. Workmen at the Coast Guard Yard, Curtis Bay, Md., installing the three Diesel generators on the lightship. Coast Guard engineers plan to operate each engine continuously, in turn, for approximately a three-month period, starting each by remote control. Thus, it is possible for the vessel to remain on station for 9 months without attention, except for the shore station operator's supervision at the remote control panel.

Pictures 1, 2, 3 and 5 U. S. Coast Guard Official Photos generator combination. If one generator stops at any time, another automatically starts and the transmitter sends a series of pulses that change the red light to flashing green and also sound an audible alarm.

Economy is the big reason for producing the new crewless lightship. Of the 37 manned lightships guarding important U. S. shipping lanes, each has a crew of one warrant officer and approximately 16 enlisted Coast Guardsmen. Original cost of a manned lightship is $750,000, as compared with $375,000 for an unattended or crewless lightship, including shore remote control equipment. An annual saving in cost due to reduced personnel on an unattended lightship would be $38,000, plus $21,000 a year that would be saved in supplies and food.

In clear weather the lightship will require no attention from the operator—the light will operate continuously and the radio beacon will operate 10 minutes each half hour. When visibility becomes poor the operator will start the fog signal, and the radio beacon will operate continuously.

The lightship has a mast height of 40 feet above the water. Twin lenses with a 500-watt bulb in each furnish a 10,000 total candle power light, visible for 10 to 15 miles. If both twin lights should burn out, a remote possibility, a battery-powered emergency light would cut in automatically, and a signal would tell the shore operator that the main light is out. An automatic pump will keep water in the bilges at a safe low level.

Ship equipment completely fills the space normally used by propelling machinery. The lightship will have to be towed to its station and anchored.

Not A New Idea

The idea of an unattended lightship is not new. Such a craft was operated successfully from 1935 to 1939 in Lake St. Clair, a small lake in the rivers connecting Lake Huron and Lake Erie. This inland lightship was replaced by a fixed structure in 1939. The new lightship, how-

(Please turn to page 53)

Why We Have Detergent Oil

Additives Enhance Lube Factors

By JOSEPH P. McHUGH

The Texas Company

SINCE that day when an unknown genius used a handful of fat to ease the squeaking of the first cart wheel, lubrication has been vital to the progress of mankind.

There is no doubt that petroleum was used as a lubricant in an occasional sort of way down through the ages, but it was not until 1854 that it was first used commercially. Then a farseeing gentleman named Lewis Peterson ladled two barrels of seepage crude each week in Western Pennsylvania and sold it to the Hope cotton factory in Pittsburgh where it was mixed with whale oil to obtain a superior and economical spindle oil. However, it was not until 1859 that the famous Drake well came through and changed the course of history. Since those carefree days, lubrication has become more and more complex.

World War II brought lubrication problems which had never been dreamed of before, from high speed, high compression aviation engines operating in atmospheric temperatures 100 degrees below zero to desert vehicles driving through sand and dust with the air at 150° above or more, so that some changes had to be made in order to have oil do its job satisfactorily.

It was shortly before and during the war that such words as "detergency," "dispersion," "additives," "preservatives" and the like became asociated with oil and the layman, whose sole desire was to have his boat or car run smoothly.

To take the mystery out of the "new" words which have cropped up in the oil business, the best reference work is your dictionary. There you will find that "detergent" means cleansing, "additive" is something you add, "dispersion" is the act of dispersing or scattering something, and "preservatives" simply preserve and protect. And those words have the same meaning wherever they are used, be it in the oil business or anywhere else. You can group all these additives under the single heading of chemicals. It would take an expert petroleum chemist to describe their make-up and another one to understand what he was talking about, so the best advice for the layman is simply to rely on the chemists' word.

The engine of your boat is subjected in normal use to considerable full-throttle operation. Consequently, marine operation is "heavy duty" most of the time and, because of this, the use of a heavy duty oil is required for best operation and maximum engine life.

During the war, rapid gains were made in the development of heavy duty oils which would give maximum lubricating efficiency in all types of inboard marine engines, whether gasoline or Diesel, largely through the incorporation of carefully selected additives which fortify the properties of the most desirable type of highly refined base oils. *It should be noted, however, that for outboard motors and all two-cycle gasoline engines where the lubricating oil is mixed with the fuel, a straight mineral oil is required.*

Detergents in a lubricating oil provide a cleansing and dissolving action on engine deposits, so that initial formation of such deposits in new engines is prevented and old deposits in used engines are reduced or removed. The use of such oils results in a clean engine and, after a period of use, detergent oils will appear darker in color, which is normal, and results from the soot which accumulates in the oil and is kept dispersed by the properties of the additive and thus prevented from depositing on engine parts. Filtration will remove any harmful abrasives from an oil of this type as filters are not as likely to become clogged with carbon sludge as if untreated oil were used.

One quality which is obtained by the use of the proper additives is the prevention of corrosion of bearing structures such as the new alloy, heavy duty type bearings used more and more widely in recent years, particularly in high speed Diesel engines.

Modern marine engine oils give protection against rusting in addition to improved lubrication and less wear during break-in periods of new engines and run-in operation after repairs. Engines seldom wear out;* they rust out and therefore rust prevention is of vital importance.

Resistance to sludge is another highly important quality obtained by the use of the correct additives in lubricating oil. Sludge falls into two general classifications, the most common in marine operation being caused by low engine temperatures. This is a watery type sludge formed by water condensation in a "cold" engine which emulsifies with solids, particularly free carbons. The additives resist this type of sludge; however, there is no lubricant known which will resist emulsification entirely if the engine is operated at too low a temperature. The solution is to raise the operating temperature to a normal level. The other type of sludge, high temperature, is formed by carbon and gum collecting around piston rings, ring grooves and sometimes valves. A good quality heavy duty oil resists the formation of such deposits.

The question has been asked us many times whether it is good practice to mix detergent oil with straight mineral oil, or whether one can mix different makes of detergent oil. Generally speaking it is not good practice because sludge may result. If, from necessity, you must add detergent oil to a partly filled crankcase or non-detergent, it is best to drain completely after not more than ten hours operation, then refill with detergent oil. The same condition may exist when detergent oils of different manufacture are mixed. It is best to fill entirely with the same brand and type of oil and add only the same brand and type when required. Any change of brand should not be made until you drain completely.

Heavy duty detergent marine engine oils are necessary for best performance of high speed Disesl engines and superior performance in gasoline engines. In addition to complete lubrication, the combined action of the oil and additives prevents ring sticking, reduces sludge, protects bearings, keeps ports open in two-cycle engines, reduces ring wear, protects against rusting of cylinder rings and valves during service and lay-up periods, and prevents scuffing or excessive ring wear of new or overhauled engines.

The whole matter boils down to just this: The Chemists put a certain something in the oil which results in better lubrication, keeps your engine clean, protects it from corrosion, and saves you money.

Oil is the life blood of your engine and the additives are the adrenalin.

Robot Lightship

(Continued from page 52)

ever, will be the first unattended U. S. lightship in ocean use.

In view of recent developments in offshore oil-drilling structures in the Gulf of Mexico, Coast Guard engineers believe that fixed structures could be placed where sea-going lightships are now stationed, although present costs are prohibitive.

If this first unattended lightship at sea gives satisfactory service, it may lead to the gradual replacement of all manned lightships.

Westinghouse equipment on *Lightship 99* includes three 18.5 K.V.A., 60 cycle, single phase, 120 volt, A.C. generators, three engine starting panels and static excitation systems for the generators, and the Visicode supervisory control system for remote control and supervision of equipment on the lightship.

The engines which drive the three Westinghouse generators are BUDA model DA diesels. These engines were modified by the Norfolk Naval Shipyard for use in driving generators by removing the clutch and reverse gear and fitting a new base with dry crankcase sump. A special cylinder head developed by the Norfolk Naval Shipyard was also installed to insure reliable operation under light loads. These engines develop 24 BHP at 1200 RPM, the rated speed of the generators.

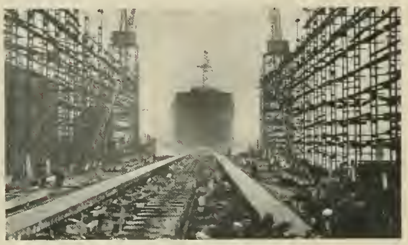
The fog signal was manufactured by the RCA Victor Division of the Radio Corporation of America. This fog signal includes a loud speaker array consisting of 180 thirty watt Navy type waterproof speaker units and three electronic signal generating units. Each unit has a signal generator, a driver amplifier and a power inverter and its output is used to operate 60 speaker units at the frequency generated by that unit. The three units together produce sound at 700 cycles, 735 cycles and 885 cycles simultaneously. Standby signal generating units are provided to insure continuous operation.

Other equipment includes: Radiobeacon transmitters, Type LSR 420-G, 150 watts output, maker, Televiso Products, Inc.; Radiobeacon and fog signal timers, Type MT-179, maker, Wallace and Tiernan Products Inc.; Engine Exhaust Silencers, Size No. 6, spark arrestor type, maker, Maxim Silencer Co.; Diesel engine starting battery, Exide Ironclad, Type 2MVAHT, 17 plate, 16 cells, 32 volt, maker, Electric Storage Battery Co.; Standby power and visicode supervisory control system battery, Exide Ironclad, Type 2 MVHL, 15 plate, 56 cells, 112 volt, maker, Electric Storage Battery Co.; Chargers for storage batteries, one for charging 56 cell battery, maker, General Electric Co., Lynn, Mass., and one for charging 16 cell battery, maker, Westinghouse Electric Corp., Penna.; Fresh water circulating pump, 1½ G.P.M., maker, Bell and Gossett Co.; Automatic bilge pump, 35 G.P.M., maker, Fairbanks Morse, Inc.; Ventilation fan, type DN-12A, 1210 C.F.M., maker, Hartzell; Automatic carbon dioxide fire extinguishing system, 8-50 lb. CO 2 cylinders plus necessary nozzles and controls, maker, Walter Kidde & Co., Inc.; Main navigational aid light, type FCB, dual lens beacon light, maker, Crouse Hinds Co.; Standby navigational aid light, type FA-51, 200 MM, with flasher and lamp changer, maker, Wallace and Tiernan Products, Inc.

Tanker "T. S. Petersen" Launched

Mr. and Mrs. T. S. Petersen at the launching of the S.S. "T. S. Petersen."

T. S. Petersen, president, Standard Oil Company of California, after whom the the new ship is named.



The "T. S. Petersen," waterborne.

THE SS *T. S. Petersen,* first of five new tankers of 240,000-barrel cargo capacity being built for Foreign Tankship Corporation, a subsidiary of Standard Oil Company of California, was launched on April 11 at the Sparrows Point, Md. yard of Bethlehem-Sparrows Point Shipyards, Inc.

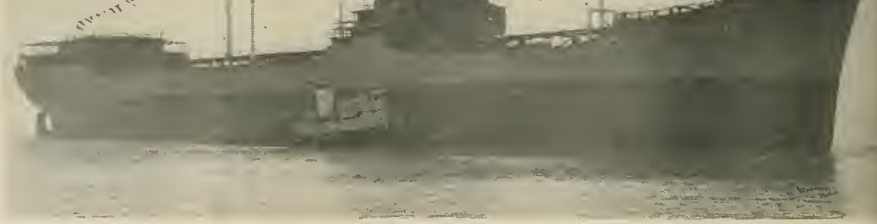
The ship was christened by Mrs. T. S. Petersen, wife of the oil company's president.

The new ship has an overall length of 624 feet, seven and one-half inches, and length between perpendiculars of 595 feet. She has a beam of 84 feet, is 44 feet deep, and has an assigned International Summer Draft of 33′-3 5/8″. Displacement, at International Tanker Summer Draft, 36,256 tons; deadweight, at International Tanker Summer Draft, an estimated 28,340 tons.

Her two main boilers are Babcock & Wilcox, water tube, with superheaters, desuperheaters and air heaters. The ship is equipped with four cargo pumps with a total capacity of 18,000 barrels an hour. The engine is

(Please turn to page 87)

The 28,000 ton tanker "T. S. Petersen" immediately after launching at the Bethlehem Sparrows Point yard.



Steady as you go!

KNOWLEDGE IS THE STRAIGHT COURSE TO ADVANCEMENT

A Department for Deck Officers

by "The Skipper"

Questions Welcomed. Just Address "The Skipper," Pacific Marine Review, 580 Market St., San Francisco, California

Determining The GM in Cargo Vessels

The Forces Affecting Stability Explained

MODERN merchant vessels are certainly superior in design and in their stability to the ships of earlier days. But still the hazard of capsizing and taking dangerous angles of heel are prevalent. A plank lying flat on a level surface is in the greatest state of stability that an object may obtain, but even in this state, there are many and various forces which may cause it to be turned partly or all the way over. So if the plank in the above example is not always safe, then why should we fool ourselves that the vessels in which we ply the trade routes of the sea are any more stable. Let us not kid ourselves. Even if we have the greatest respect for the possible frailties of our ships, what steps beyond this can we take to (a) assure ourselves as to the condition of the vessel, and its abilities to resist the capsizing forces, and (b) improve a condition of poor stability. I propose to present in this article a few of the ideas and methods of calculating the safe stability of merchant vessels.

Consider first the forces between which a vessel is suspended: The Force of Gravity is the downward force, increasing as the weight or displacement is increased, and of course this causes the vessel to sink deeper into the water. The force which prevents the Force of Gravity from completely immersing the vessel is the Force of Buoyancy. The density of the water, or rather the weight per volume, will be a great factor in such an immersion. The denser the water, the greater the resistance it can make against an object placed upon it.

Salt water is more dense than fresh water and so may resist the weight of a ship to a greater degree than can fresh water. Salt water weighs approximately one and a half pounds more per cubic foot than fresh water.

When the force of gravity has pushed a vessel down into the water to such an extent that the weight of the water so displaced is equal to the weight of the object, then the force of buoyancy is equal to the force of gravity and the vessel comes to rest. If the weight of the ship is greater than the weight of the water, an equal volume of each being considered, then the vessel will sink to the bottom or to some position below the surface. The internal space in the vessel is called the Reserve Buoyancy. The usual space so designated on a merchant vessel is that space above the waterline to the uppermost watertight deck. This is usually the bulkhead or main deck. As the beam is more or less constant at deep drafts, the vertical component of this space is the Freeboard. Much emphasis is placed upon the Freeboard as it is the best yardstick of a vessel's Reserve Buoyancy.

A vessel swings or rolls around a certain pivot point. If the concentration of all the weight in the vessel is too high, then the ship's roll is slow; by lowering the weight the roll of the ship will be quickened. A slow-rolling vessel is said to be "tender" and a quick-rolling vessel is said to be "stiff." The name of this pivot point within the ship is called the Metacenter. On the average cargo ship it is located in the upper tweendecks of the middle hatch, when the vessel is fully loaded.

The concentration of the weight in the vessel must remain below this pivot point, the Metacenter, if we want our ship to remain upright. If at any time the center of the weight concentration rises as high as, or above, the metacenter, then the force of gravity will pull the weight down again, and in a ship this means that the upper section of the ship will be drawn to a position below the pivot point or, in untechnical terms, the ship capsizes or at least turns so far over on her side that she is as good as turned over. The center of all this weight concentration is called the Center of Gravity. This includes the weight of the ship itself, the weights of the cargo, fuel, water, stores and the crew and passengers. (Fig. 1)

The center of the concentration of the forces of buoyancy is called the Center of Buoyancy. In any partly submerged body this is in the geometric center of the underwater mass. As a ship rolls in a seaway, this underwater mass is constantly changing in shape, and likewise the location of the center of buoyancy is forever aligning itself in the geometric center of the newly shaped mass. The various positions that the Center of Buoyancy describes in aligning itself, would appear as an arc of a circle. (Fig. 2)

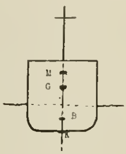


Figure 1.

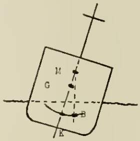


Figure 2.

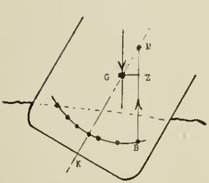


Figure 3

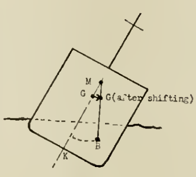


Figure 4

Normally, the Center of Gravity does not describe any series of positions but remains fixed. Small changes occur as fuel, water and stores are consumed at sea, and cargo and fuel, etc. are moved in or out of the vessel in port. I say that the center of gravity is fixed at sea, because the daily change is small.

At any given draft or related displacement of the vessel, there is a definite location of the metacenter. It is usually measured by its height above the keel (K). So if the Metacenter is called (M), the height of M above K can easily be referred to as KM. Customarily, you will find that the M moves about 4 or 5 feet toward the keel when the draft increases from a light draft of about 12 ft., to a deep draft of about 28 ft. That is to say, that as the draft increases, then the KM decreases. We can see that if the M is moving downward, and the cargo that we are loading *may* be moving the Center of Gravity (G) upward, then the G may reach a point where it is above M. This will cause a bad heel or even capsizing of the vessel. There have been more than just a few cases, some of them quite recent, in which the vessel took a bad sheer when the last breast lines were let go at the loading berth.

Notice in Fig. 2 that the plumbline from the Metacenter drops upon the center of buoyancy, regardless of the angle of heel. If a plumbline were dropped from G, then the two plumblines would not be coinciding; the greater the angle of heel, the greater the distance between them. This distance between two such plumblines is referred to as the Righting Arm length. The plumbline through B indicates the force of Buoyancy acting upward, the one through G acting downward by force of gravity. When these two forces are acting against each other but not in the same line, they cause a tilting action, but because the center of buoyancy will always be found in that part of the ship which is deepest in the water, the action will be one of tilting the vessel up onto an even keel. If the vessel is already on an even keel then there will be more resistance against tilting.. Figure 3 shows a close-up view of the M, G, and B positions and forces. When M, G, and B are all in the same vertical line, then the vessel is in a state of equilibrium, such as on even keel (Fig. 1). But weight shifting in the vessel during a heavy roll, etc., will cause the G to move off the vertical centerline of the ship, and you may find that the M, G, and B align themselves in a vertical line alright, but now the vessel has taken on a list (Fig. 4). The only way to right the vessel in such a case, is to move the weight back to its original position or place a counterweight on the opposite side of the ship. However, this is in reference to solid weights or to liquids pressed tightly into a tank. Do not use this method to counteract for free liquids in a compartment or tank.

The Righting Arm previously mentioned will be referred to hereafter as GZ, as shown in Fig. 3.

We can see that it is not only imperative that the G be kept below M, but that both shall be on the centerline of the vessel; otherwise a list such as we have in Fig. 4 will appear, and the vessel will remain heeled over. In all the other figures, the vessel may be shown with a list, but the opposing forces of buoyancy and gravity will cause the vessel to right herself. The righting force is called Righting Moments and is in units of foot-tons. The amount of righting moments may be obtained by multiplying the length of the righting arm by the displacement of the vessel. Thus when a 10,000 ton vessel lists over to an angle where the righting arm is found to be 2 feet, then 10,000 x 2=20,000 foot-tons of force put to bear in such a way as to make the vessel right herself. Of course the momentum will probably carry her past the vertical, and righting moments developed by rolling beyond upright will go to work to right the ship from the other side. This action is dampened by the friction of water against the hull so the ship eventually comes to rest on an even keel. As the vessel heels over, the Righting Arm (GZ) increases in length, but only to a certain angle of heel. This is the point at which the greatest number of Righting moments will be developed. Any further heeling will decrease the length of the Righting Arm. It can be seen that the greater the angle of heel where the righting arm is greatest, the more resistance the ship has to the upsetting tendency. A table or graph showing the various Righting arm lengths for increasing angles of heel, especially for the varying conditions of load or displacement, would be of great value for determining the ranges of safe stability of a ship.

Unfortunately, due to the varying types and natures of cargoes carried in merchant vessels, the center of gravity of the loaded vessel will seldom ever be the same. Being in a partly loaded condition will complicate matters even more. So another method of determining the range of stability must be used. This method, which is quite simple and quite accurate for small angles of heel, is to measure the metacentric height, or rather the distance

(Please turn to page 81)

Pacific MARINE REVIEW

News Flashes

NEW NAVY TANKERS?

There are indications that a new tanker building program is being considered. A considerable number of high speed giant tankers discussed two years ago are now being revived, to be built and financed by private yards and chartered to the Navy for the life of the ships. Something like 30,000 tons and 28 knots is being discussed. The ships to be laid up or held for emergency. Just introduced in Congress is a resolution empowering the Navy to charter tankers on a twenty-year basis (HR 8712).

HONOLULU FIREBOAT BIDS

The Honolulu fireboat bids which were opened recently were in four categories, in three of which Albina Engine and Machine Works, Portland, was low. The Albina Company was awarded the contract with bids ranging from $174,000 to $202,000. Next to Albina was Higgins of New Orleans; then Mathis of Camden; RTC Shipbuilding Company of Camden, N. J.; Pacific Coast Engineering Company, Alameda; Commercial Ship Repair, Seattle; Maryland Dry Dock Company; Fellows & Stewart, Wilmington; Todd, San Francisco.

THE "GENERAL MEIGS"

Bid offerings on the P2 liner "General Meigs" for reconversion for American President Lines have been delayed. Architect M. J. Ryan is making some changes in the plans, and bids should be called for in about ten days.

BIDS ON THE "GENERAL WEIGEL" AND "GENERAL POPE"

The exploratory bids showed the Bethlehem, Baltimore yard with a low bid of $3,452,000 on the "Weigel", $3,461,000 on the "Pope". Other bids on the "Weigel" only were: Willamette Iron Works, $4,387,000; Bethlehem, San Francisco, $4,443,000; Newport News, $4,614,000; Todd, San Francisco, $5,538,000. No award is likely on this set of bids as they were merely needed for the information of the Maritime Commission in negotiating with a purchaser.

BRITISH WORRIED

British shipbuilders are complaining over the American assistance program in its rehabilitating of the shipyards in other than British countries, as the British find it difficult to compete with them.

FISHING BOATS WANTED FOR KOREA

The ECA has made available $675,000 for the purchase of fishing boats for Korea. There are five types with a total of 38 boats ranging from 30 to 100 gross tons, from 19 to 27 meters long, from 80 to 400 HP diesel engines and 10 to 20 HP diesel auxiliaries. The first four categories are to be wooden ships under American Bureau classification. The 100-ton, 27 meter, 400 HP whale catchers (2) are to be of steel according to Lloyd's classification. Information is available through the field service of the Department of Commerce.

Maritime Reorganization Plan

— Commission's Functions Distributed

THE reorganization of the Maritime Commission (or rather of the functions of the former Maritime Commission) being now in effect, there are many inquiries as to their import. The Commission itself is abolished, and a 3-member Federal Marine Board and a Maritime Administration in the Department of Commerce come into being. The Chairman of the Board is also the Maritime Administrator.

The Association of American Ship Owners has analyzed the changes as follows:

I

Functions Transferred to the Board Independent of the Secretary of Commerce

A. *Functions Under the Merchant Marine Act, 1936,* authorizing the Commission to investigate discriminatory practices prejudicing American exports and directing it to report and recommend legislation to Congress on such matters.

> General Philip B. Fleming has been designated Under Secretary of Commerce for Transportation. He will not be a member of the Maritime Board.
>
> Appointed as temporary members of the Board are John T. Koehler, chairman, now Assistant Secretary of Navy; South Trimble Jr., now chairman of the advisory board of the Inland Waterways Corp., and Rear Adm. Paul L. Mather, now liquidator of War assets.
>
> They will be replaced within 90 days by permanent appointments.

B. *Functions Under the Shipping Act, 1916,* authorizing and directing the Commission to:

1. investigate, hear complaints and award damages for deferred rebate, operation of fighting ships, retaliation against shippers and discriminatory practices;
2. correct unjust discriminatory charges and enforce just and reasonable practices in foreign commerce;
3. enforce just and reasonable charges and practices in interstate commerce (except as to matters over which the ICC has jurisdiction); and
4. investigate foreign discriminatory practices and report thereon to the President.

C. *Functions Under the Merchant Marine Act, 1920* authorizing the Commission to promulgate rules affecting shipping and foreign trade for the purpose of adjusting unfavorable conditions arising out of foreign competitive practices and to request other Government agencies to suspend or make new rules affecting shipping in the foreign trade.

D. *Functions Under the Intercoastal Shipping Act, 1933,* authorizing the Commission to regulate and control rates and practices of domestic water carriers in matters over which the ICC does not have jurisdiction.

II

Functions Transferred to the Board Subject to Guidance by the Secretary of Commerce

A. *Functions Under the Merchant Marine Act, 1936,* authorizing and directing the Commission, in connection with making, amending and terminating subsidy contracts, to:

1. fix minimum wage and manning scales for subsidized companies;
2. approve the qualifications of subsidy applicants;
3. give preference to the support of domestic communities primarily interested in such contracts;
4. determine relative foreign and United States costs;
5. enter into subsidy contracts;
6. determine, after hearings, the need of an operating subsidy to meet foreign competition, the adequacy of existing services and whether such a subsidy would prejudice other U. S. citizens;
7. determine, upon vote of four* members, the necessity of countervailing subsidies;
8. readjust operating cost differentials during the period of the contract;
9. consent to the assignment of operating subsidy contracts to others;
10. exempt subsidized operators, upon hearings, from the statutory prohibition against engaging in domestic services; and
11. terminate operating subsidy contracts for default and willful violations.

B. *Functions Under the Shipping Act, 1916,* directing the Commission to investigate foreign construction costs and the domestic and foreign marine insurance business.

III

Functions Transferred to the Department of Commerce

A. *Functions Under the Merchant Marine Act, 1936,* authorizing and directing the Commission to:

1. study all phases of shipping and collaborate with shipowners, shipyards, trade organizations and Government agencies;
2. operate dock, terminal and shipbuilding properties;
3. maintain the United States Maritime Service;
4. coordinate functions of freight forwarders in foreign trade;
5. repair and maintain the reserve fleet;
6. determine just compensation upon vessel requisition;
7. regulate, with the Department of Treasury, con-

---

* There are requirements in previous legislation for a vote of 4 members. How these matters will be decided by the new 3-member Board does not appear.—Editor

struction reserve funds and grant extensions for the use of such funds;

8. complete the "long range program;"
9. design and build vessels; sell them at the depreciated foreign cost; charter them at competitive bids or charter them for undeveloped essential routes at 8½% of the depreciated foreign cost;
10. determine the charter terms and regulate the accounts of contractors and affiliates;
11. pay for the cost of national-defense features and give mortgage aid to non-subsidized vessels;
12. insure vessel mortgages, prescribing the maturity date, the interest rate up to 6%, the amortization and security provisions and the premium terms;
13. determine "essential services in the foreign trade;"
14. approve plans and specifications for vessels qualified for the subsidy contracts;
15. administer subsidy contracts and enforce Government rights thereunder;
16. acquire vessels determined to be obsolete and determine the allowance therefor; and
17. regulate, with the Department of Treasury, the capital and special reserve funds of subsidized operators; consent to the prepayment of mortgage notes therefrom; approve the withdrawal of excess reserve funds; define "net earnings" and "capital necessarily employed in the business;" permit deposits of non-subsidized earnings; and permit the transfer of special reserve funds to capital reserve funds.

B. *Functions Under the Merchant Ship Sales Act of 1946,* authorizing and directing the Commission to:

1. determine the prewar domestic cost of war-built vessels and the permitted adjustments thereto;
2. approve the qualifications of purchasers and charterers;
3. authorize a charter rate, upon the vote of four members, of less than 15% of the statutory sales price;
4. acquire old vessels in exchange and determine the allowance therefor;
5. adjust the prices for prior sales; and
6. reconvert vessels for commercial operations.

C. *Functions Under the Shipping Act, 1916,* authorizing the Commission to approve the transfer of American-flag vessels to foreign registry or their charter to foreign operators.

Book Review

THE LAW of THE SEA. By William McFee. Published by J. B. Lippincott Co. (May 1950). $3.75

The evolution of maritime law on the high seas is told in this book by William McFee, one of the most outstanding of sea writers.

For the layman interested in sea codes, this book gives a series of stories of maritime adventure, taking up the principal subjects of the law of the sea. Among them is the story of piracy, the evolution of legal piracy (Privateering), the changing status of the able-bodied seaman, and mutiny.

The book deals with such extremes as the evolution of the rights of seafaring men as wards of the legislature, and the concepts of general and particular average in the marine insurance field.

World's Largest Lifeboats For Big Export Liners

Marine Safety Equipment Corporation aluminum lifeboat, 36'6" x 12'6" x 5'4", loaded on a special trailer, ready for shipment. This is the first one of several similar boats being supplied for the "Independence" and the "Constitution," now under construction at the Bethlehem Steel Company, Quincy, Mass., for the American Export Lines, Inc. MASECO is also furnishing special Gravity Davits to handle these boats. Built completely of aluminum, this is the largest lifeboat in the world and the largest ever built. It has capacity for 150 persons. This boat is equipped with MASECO Hand Propelling Gear and MAESCO Releasing Gear. Four of the twenty of these boats will be equipped with a motor. Previous mention of these lifeboats was made in the March Pacific Marine Review. Tom Short, 245 Fremont Street, represents MASECO in San Francisco.

Pacific WORLD TRADE

Reg. U. S. Pat. Off.

First Step Toward World Trade Center

State and civic dignitaries present at the first test boring for the World Trade Center Thursday, May 18, at the Ferry Building are shown above. Left to right, they are: Kenneth Campbell, U. S. Chamber of Commerce; General Robert H. Wylie, Port Manager; Col. Harry Rothrock, assistant to General Wylie; A. W. Root, senior testing engineer for the State Division of Highways; G. L. Fox, General Manager of the Chamber; Dr. T. B. Spitzer, who wrote the original legislative report on the Center; John Judge, Regional Director of the U. S. Department of Commerce; Harry W. Squire, chief engineer for the port; B. J. Feigenbaum, president of the Board of State Harbor Commissioners; Leland W. Cutler, chairman of the World Trade Center Authority; Senator Gerald J. O'Gara; Alvin C. Eichholz, Manager of the Chamber's World Trade Department; Assemblyman T. A. Maloney; M. A. Cremer, secretary of World Trade Center, Inc.; and John Gilchrist, Manager of the Chamber's Public Affairs Department.

Cut courtesy of San Francisco Chamber of Commerce

New Forwarder Regulations

Copies of the U. S. Maritime Commission's new regulations of freight forwarders, under General Order No. 72, have been sent out to all members of Customs Brokers & Forwarders Association of America, Inc.

The regulations require that "all persons engaged in the business of freight forwarding on the effective date (June 1) register with the Commission within sixty days after such date." Forwarding firms not associated with the CBFAA as members may receive free copies of the new regulations by writing to the Association's headquarters at 10 Bridge Street, New York 4, N. Y.

Control Regulations In Principal Foreign Countries

Prepared by the
Office of International Trade
Department of Commerce
(Revised as of Jan. 20, 1950)

(Continued from May issue)

In many countries foreign goods may not be imported unless covered by an import license which must be obtained by the importer and in certain cases must have been granted before the order for the goods has been placed. Also in many countries, owing to the extreme scarcity of dollar exchange, the authorities require that an exchange permit be obtained before the goods may be paid for. Before shipping his goods, the exporter should make certain that the importer has obtained these permits, if required. He should insist on being informed as to the identifying number or symbol of the document.

The following tabulation of the import and exchange permits required in foreign countries, the first part of which appeared in the May issue, has been prepared as a general guide to exporters. These regulations apply primarily to goods of United States origin and/or payable in United States dollars. Necessary detailed information may be obtained by writing the Areas Division, Office of International Trade of the Department of Commerce.

Country	Is import license necessary?	Is exchange permit required?
Iceland	Yes	Yes; it is usually issued concurrently with import license, but does not guarantee allocation of exchange, which depends on establishment of priority and availability of foreign exchange.
India	Yes	Yes; however, foreign exchange automatically released upon presentation of validated import license to exchange bank.
Indonesia, United States of.	Yes	Foreign exchange automatically released upon presentation of validated import license to exchange bank.
Iran	No; but prospective imports must come within annual or supplemental quotas.	Yes.
Iraq	Yes; goods exported before license is obtained are confiscated.	Yes; permits are obtained through licensed dealers.
Ireland	For a few products only	Yes.
Israel	Yes	Yes; import license usually carries right to foreign exchange.
Italy	Yes; from Italian Exchange Office, except "List A" (mostly industrial raw materials which require only bank "benestare")	Yes; combined with import permit in same document.[5]
Japan	Yes	Import license carries right to foreign exchange.
Korea, Republic of	Yes	Yes; except in barter transactions.
Lebanon	Yes	Yes.
Liberia	For arms, ammunition, and rice only.	No.
Malayan Federation	Yes	Yes.
Mexico	Long list of products prohibited from importation; another list of commodities requiring import license.[1]	No.
Morocco:		
French Zone	Yes	Yes.
Spanish Zone	Yes	Import license carries right to foreign exchange.
Tangier (International Zone)	No	No.
Netherlands	Yes	Yes ("payment attest").
Netherlands West Indies	Yes; except for certain items.[1]	Yes.

Country	Is import license necessary?	Is exchange permit required?
Newfoundland (See Canada)[6]		
New Zealand	Yes	Import license carries right to foreign exchange.
Nicaragua	Yes	No; import license authorizes purchase of exchange; exchange is rationed and imports closely regulated by categories.
Norway	Yes	An authorization to transfer foreign exchange must be obtained from the Bank of Norway and will usually be noted on the import license.
Pakistan	Yes	Yes; however, foreign exchange automatically released upon presentation of validated import license to exchange bank.
Panama	No	No.
Paraguay	No	Yes.[7]
Peru	No; but importation of many items from the United States is prohibited.	No.
Philippine Republic	Yes; for certain articles, for which import license number must appear on consular invoice.	Yes; import license assures issuance of exchange license by authorized agent of Central Bank; exchange is licensed for other payments, but subject to special regulations.
Poland	Yes	Yes.
Portugal (including the Azores and Madeira)	Yes	Yes.
Portuguese Colonies	Yes	Yes.
Rumania	Yes	Yes.
Singapore	Yes	Yes.
Spain (including the Canary Is.)	Yes; largely limited to essential raw materials.	Exchange to cover import license obtainable only through Exchange Institute, which usually, but not mandatorily, grants it. Special exchange rates fixed for many products.
Spanish Colonies	Yes	Import license carries right to foreign exchange.
Surinam	Yes	Yes.
Sweden	Yes; rigid controls. A few minor products are exempt from import license.[1]	Yes. However, foreign exchange, including dollar exchange, is automatically made available if the import license specifies payment in such currency, and if the license is registered with a foreign exchange bank within two months after its issuance.
Switzerland	Yes; for certain products, mainly those under national allocation or those subject to governmental distribution.[1]	No difficulty in regard to exchange.
Syria	Yes	Yes.
Thailand	Yes; for a limited number of items, including luxury foods, cosmetics, various kinds of essential oils, toys, automobiles and motorcycles.	No.
Turkey	Yes	Yes; special exchange license from the Control Office.
Union of South Africa (including South West Africa, Basutoland, Bechuanaland, and Swaziland)	Yes. All imports from all countries are subject to license issued by the Director of Imports and Exports in the Union. Imports from all countries of a long list of "unessential" items are prohibited.[8]	The import license carries right to foreign exchange up to amount expressed in local currency in relative import license.[8]
United Kingdom	Yes; except for a few products.[1]	Yes.
Uruguay	Yes	No; import license carries right to foreign exchange.

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Country	Is import license necessary?	Is exchange permit required?
U. S. S. R.	Yes; importing government agencies responsible for securing own permit.	Yes; all exchange allocated by U. S. S. R. State Bank upon receipt of import license.
Venezuela	No; except for approximately 20 tariff items.[1]	No.
Yugoslavia	Yes	Yes.

Footnotes

1. American exporters may obtain information regarding the import controls on their products by writing the Areas Division or one of the field offices of the Department of Commerce.
2. All exchange transactions amounting to more than 20,000 cruzeiros require an exchange permit from the Banco do Brazil.
3. Includes Bermuda, British West Indies, British East and West Africa, British Guiana, British Honduras, Northern and Southern Rhodesia, and minor colonies, protectorates, and Trusteeship territories.
4. Refers to Chinese National Government regulations. At present, most Chinese ports are under communist control. Under the foreign exchange and trade controls announced early in June 1949, for communist-controlled areas, both a special import license and foreign exchange deposit certificate are required for all permitted imports.
5. The importer buys his dollar exchange on the basis of the daily free market rate.
6. Since March 1949 Newfoundland has been a Province of Canada.
7. Importers must conclude a contract for purchase

of exchange with the Bank of Paraguay before purchasing abroad.

8. Copies of a memorandum entitled "Summary of Import Controls in the Union of South Africa" are available from the British Commonwealth Branch, Areas Division or the field offices of the Department of Commerce.

Fireman's Fund Personnel Changes

Fireman's Fund Insurance Company and its affiliates have granted Vice President George Jordan an indefinite leave of absence, effective July 1, from his assignment as head of the organization's Pacific Coast marine operations. Concurrent with this action of the Board, Woodward Melone, Assistant Marine Secretary of the fire and marine companies of Fireman's Fund Group since 1948, was advanced to the position of Marine Secretary.

Vice President Jordan joined the head office staff of Fireman's Fund in 1911. In 1917, he assumed charge of the head office marine claims department and in 1923 he was elected Assistant Marine Secretary, and transferred to New York as manager of the Atlantic Marine Department. In 1923, he was appointed Marine Secretary and returned to the head office in San Francisco to supervise all marine operations, advancing to Vice President in 1940.

Melone has served in the marine department and as a marine underwriter since August, 1935. He graduated from Stanford University and saw six years of active service with the army in the Pacific and European theatres of war. Discharged with the rank of lieutenant-colonel, he resumed his insurance career with Fireman's Fund Group in 1946.

Woodward Melone, advanced by Fireman's Fund.

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American Trust Features Steamship Flags

Recognizing the vital importance of the shipping industry to the welfare of San Francisco and commemorating Foreign Trade Week and National Maritime Day, the Matson Building Office of American Trust Company featured a colorful display of the house flags of 25 San Francisco steamship companies.

"Ports of the World-1950"

North America Companies, Philadelphia, have just made available to their Ocean Marine Policyholders copies of "Ports Of The World-1950," the latest in their "Ports Of The World" series, which began in 1947. Prepared by North America's Marine Service Department, the booklet marks the Department's 25th year of ocean marine loss prevention activity.

This issue offers information of a more detailed and permanent nature than its predecessors. The first section describes labor and handling conditions, climate, extent of congestion and the pilferage and damage situation at practically every foreign port of importance. The second section deals with "preventable" losses on overseas shipments. It contains valuable information on the packing, marking and shipping of goods abroad and is aimed at cutting down these "preventable" losses which, in recent years, have cost American Foreign Trade millions in dollars and an immeasurable loss in prestige.

Copies of the booklet are obtainable through any "North America" insurance agent or broker.

Course Featuring San Francisco Ports

San Francisco Bay ports and maritime industries are being featured in a special six-weeks summer course entitled "The Port in World Trade" to be launched for the first time at the summer session of the San Francisco State College, School of World Business.

Unique in its concept of the seaport as a "key to world commerce," the State College six-weeks course is especially planned for employees of major Bay Area business and shipping firms and others interested in port operations and world trade, as well as for Bay Area college students.

Frank Foisie

The course starts Monday evening, June 26, at 6:30 p.m. and will be held three times weekly, on Mondays, Wednesdays, and Thursdays, from 6:30 to 8:30 p.m., for six weeks ending August 4.

In addition to the coverage of functions and operations of ports, terminals, and maritime industries, including shipping, import-export, freight, forwarding, and stevedoring, the course will feature presentations of the various group interests in waterborne trade, including management, labor, shippers, consignees, and others.

Classes will include special lectures by representatives from Bay Area ports and maritime industries.

Frank P. Foisie, prominent in Pacific Coast shipping for many years is to be co-ordinator and principal instructor for the course, which also has the assistance of an Advisory Committee.

Tuition for the complete course, covering 18 two-hour lectures, discussions, and field trips, is $27 and will carry 3 units of college credit.

Information on the "Port in World Trade" course may be obtained from The School of World Business, San Francisco State College, 124 Buchanan Street; telephone —UNderhill 1-0842.

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Outports on San Francisco Bay

(Continued from page 40)

The world's largest sugar refinery has a deepwater wharf at Crockett, where raw bulk sugar from Hawaii is now delivered by automatic loaders and vacuum-pressure equipment to the plant of the California-Hawaiian Sugar Co.

Wharves between Crockett and Port Costa and another at Ozol for vegetables and fish oils, accommodate ocean-going vessels. On the north side of the Strait the Army has two wharves at Benicia Arsenal, while Benicia and the Fairfield-Suisun channel area have municipal ferry landing facilities, including fish wharves.

Vallejo has a general cargo wharf for inland carriers, while the east side of Mare Island Strait has grain and oil wharves at South Vallejo. There is also a Navy mooring wharf, an oil wharf and two ferry slips at Vallejo.

Cargoes moving to and from the smaller terminal facilities in the area cover a wide range of agricultural and industrial products, including raw materials, ores and aggregates for processing, fabricating and construction purposes.

Stockton's major cargoes, for instance, are in canned foods, dried fruits, barley, molasses, rice and industrial items, while Redwood City handles cement, canned goods, sand, petroleum and gypsum.

Petroleum is the No. 1 product moving out of North Bay terminal facilities, including shipments from Richmond, Avon, Martinez and Oleum. Various raw and finished products, including barge-loads of sand, gravel and aggregates, mark much of the movements between outer ports and other Bay terminal facilities.

The fishing industry is also an important factor in the smaller ports seasonal operating activities as a supplement to general waterborne commerce.

Bay Ports Study Plan

The State Senate Committee is studying the comparative trends of the small and large ports operations as they relate to the other growth factors in industry, agriculture and service industries throughout Northern California.

The importance of public and private investments in Bay Area port and terminal facilities, as represented by the state-owned Port of San Francisco, the municipalities of Oakland, Richmond, Stockton, and Redwood City, and the private owners and operators, provide rhe incentive for the Committee's program. This includes improving port relationships from shipper to consignee. The ports are in the middle of this flow of cargo via carriers, world traders, cargo-handling and related maritime industries.

Joint effort may result in the correction of major problems, including cargo-handling costs, and interruptions in ship services, both of which are familiar barriers to greater ocean-borne cargo movements through the Golden Gate.

Marine Exchange Installs Radar

(Continued from page 42)

on television receivers—which is mounted on the sloping top of the indicator unit. By the simple operation of one knob, the operator can limit the map to just the area within one mile of his station, or he can view the area within a selected radius of 2, 4, 8, 20 and 40 miles, as the need indicates. In each case the map fills the entire circular face of the cathode ray tube. The location of the radar set is always at the center of the map.

The location of objects with respect to the radar equipment can be quickly and accurately determined from the image on the cathode ray tube by the manipulation of two controls, one of which provides the azimuth or direction of the object and the second, a variable range finder, which provides the distance to the object. The cursor knob controls a variable cursor line which can be rotated until it crosses the cathode ray image of the ship or other object whose position is to be determined. The bearing or azimuth can then be read directly from the azimuth circle associated with the cursor. A flashing lubber line on the face of the cathode ray tube indicates the position of true north so that the true bearing can be read directly.

To allow more accurate determination of the distance to a target, a variable range marker is provided in addition to the fixed range markers. This accuracy is accomplished by turning the variable range handle which causes a bright spot to move across the face of the cathode ray tube from the center. When the spot intersects the image, the distance between the radar and the target or object can be read directly on a dial in tenths of miles.

From this azimuth and range data based on the location of the radar equipment, the location of any object can be pinpointed on a navigational chart of the area by the usual procedures.

Operating convenience is a salient feature of the MU-1

(Please turn to page 80)

Peter B. Kyne at Propeller Club

Peter B. Kyne

The May meeting of the San Francisco Propeller Club found one of the most intriguing figures in the field of marine journalism speaking on "Old Tales and Old Times of the San Francisco Waterfront." He is Peter B. Kyne who has immortalized California Street and San Francisco shipping in the "Cappy Ricks" stories and in many other books. Among the most famous are "The Valley of the Giants," "The Pride of Palomar" and "The Long Chance."

For an hour Pete, who is a past president of the San Francisco Press Club, and of the Army and Navy Club, regaled the members with anecdotes of early San Francisco shipping. Most of them centered around his own experiences.

Running Lights

Sevier Elected President of Matson

Randolph Sevier has been elected president of the Matson Navigation Company, effective June 30, 1950. John E. Cushing, who has been president since May 1947, will retire from that office but will remain a director of the Company. He will become president of The Oceanic Steamship Company, Matson's wholly owned subsidiary, on July 1, 1950.

Sevier has been executive vice-president of Matson since September, 1948. Prior to that time, he had wide experience in the shipping business as head of the shipping and terminal operations of Matson in Honolulu under the general agency of Castle & Cooke, Ltd., of which he was a vice-president. Sevier's familiarity with Matson's ships, operations, and personnel dates back to 1923 when he started as a clerk on the docks in San Francisco. He served as freight clerk and purser on Matson ships from 1923 to 1926. In the latter year he became manager of the Hawaii Transportation Company at Hilo, and four years later joined the steamship department of Castle & Cooke.

Sevier was one of the original organizers of the Hawaii Employers Council and served a term as vice president of that organization. He is a member of various civic organizations and the Pacific, Commercial, Outrigger, Propeller and Republican clubs. A native of California, he is a graduate of the University of California in Berkeley.

Cushing came to Matson three years ago from American-Hawaiian Steamship Company, of which he had been president since 1938. He has had a long career in steamship operation. A native Californian, he is a graduate of Stanford University, and has been associated with the shipping industry since 1908. In the First World War, he was in charge of overseas military freight traffic at the Port of New York as a Major in the Army Transportation Service. Following the end of that war, he served as acting director of the Emergency Fleet Corporation of the United States Shipping Board. During World War II, he was Assistant Deputy Administrator of the United States War Shipping Administration.

As president of the Oceanic Steamship Company Cushing will will continue to handle the company's negotiations with the government on Oceanic's two passenger ships, *Mariposa* and *Monterey*, which have been partly reconverted.

Randolph Sevier

Warranty Map

A map which shows the practical boundaries of world trading areas so far as they are affected by marine insurance warranties has been prepared by R. Daniels of London, England. The map is primarily intended for the use of ship owners, underwriters and insurance brokers, and is a handy reference for the officers of ships insured with the Institute Warranties. The map is priced at 2 shillings 6 pence plus postage and is obtainable from R. Daniels, 1-4 Bury Street, London, E.C.3, England.

Maritime Day in San Francisco

In an outstanding Maritime Day observance, Fleet Admiral Chester W. Nimitz made an eloquent presentation of factors contributed by the Merchant Marine to National Defense. Speaking in the San Francisco Commercial Club to a meeting sponsored by the Junior Chamber of Commerce and others, Admiral Nimitz emphasized—as did General Omar Bradley three days previously at an Armed Forces Day talk—the need for two types of merchant vessels in which the American Merchant Marine is deficient. One of these is high speed tankers, and the other is convertible passenger ships.

Scenes from the overcrowded Maritime Day meeting are shown here.

Top: left to right: Capt. Edward Macauley, Consulting Engineer and former member of the Maritime Commission; Capt. Theodore Wirth, Public Relations Officer, 12th Naval District; Dashwood P. Darling, Assistant Manager for Grace Line at Cristobal and President of Propeller Club, Port of Canal Zone; M. A. Cremer, Manager, Marine Exchange; General Robert H. Wylie and Port Chaplain Ragnar Kjeldahl.

Bottom: American President Lines table at the Maritime Day luncheon. Clockwise around the table: Ted L. Eliot, recently named Assistant Vice President, Passenger Traffic; Capt. Vic Pearson; Thomas H. Wheeldon; Joseph A. Tognetti (standing); Ed D. Flaherty; John T. Danaher, who was recently promoted to Vice President, Passenger Sales and Service, Eastern Division, with headquarters in New York City; John E. Espey; Floyd A. Downs (just in from Shanghai); Al F. Walker; Lonnie V. Foye.

Fleet Admiral Chester W. Nimitz speaking in San Francisco on Maritime Day. Recognized at the head table are General Albert Wedemeyer of the 6th Army; Admiral Stika of the Coast Guard; Harold Dobbs, president of the Junior Chamber of Commerce; Don Fazackerly, member of Board of Supervisors of San Francisco; Mrs. Alfred Pittman, president of the Women's Organization for the American Merchant Marine; Capt. Malcolm E. Crossman of the United States Maritime Service Training Station, Alameda, Calif. Lower left in the picture is Frank Di Marco, Publicity Manager for Maritime Day; General Robert H. Wylie, Port Manager of San Francisco; Port Chaplain Ragnar Kjeldahl; William Pengra, Public Relations Officer at San Francisco Naval Shipyard; and Joseph A. Moore, Sr. and Joseph A. Moore, Jr. of Moore Dry Dock Company.

Pacific Coast Stevedore And Safety Contest Awards Made in Portland

The five year Stevedore and Terminal Injury Frequency Contest awards for the Oregon and Columbia River Area were formally presented at a dinner meeting on May 10 in Portland, and a second presentation was made in public at the Paramount Theatre on May 12. Chairman of the May 10th dinner meeting was J. W. Hubbard, Chairman of the District Accident Committee. The meeting was arranged by Don A. Willhite, Area Supervisor.

Byron O. Pickard Memorial Trophies and certificates have been awarded annually to companies having the lowest cumulative compensable injury frequency in each group. Permanent possession of each trophy goes to the company which won it the greatest number of times during the five year period or, in the case of a tie, had the lowest frequency for the five years. Award for permanent possession of the Columbia River District trophies was made to the following: On-Shore Stevedoring Trophy, won by Brady-Hamilton Stevedoring Co., sponsored by Pacific Marine Review; Off-Shore Stevedoring Trophy, won by Luckenbach Steamship Co., sponsored by Employers Mutual Liability Insurance Co.; Marine Terminal Trophy, won by Portland Commission of Public Docks, sponsored by Albina Engine & Machine Works, Inc., N. W. Marine Iron Works, Marine Electric Co., Steckmest & Co. and Willamette Tug & Barge Co.

Awards for the San Francisco Bay Area were made April 14, and reported in the May Pacific Marine Review.

Top: Presentation of Columbia River District Terminal Trophy at Paramount Theatre, Portland, May 12, by Kenneth Cochrane of Portland Chamber of Commerce, to Karl Glos, Terminal Supt., Commission of Public Docks. Left to right: Kenneth Cochrane, J. C. Golden, R. M. Riley and Karl Glos.

Bottom: Pesentation of Columbia River District On-Shore Stevedoring Trophy by Kenneth Cochrane to J. W. Hubbard, Mgr., Brady-Hamilton Stevedoring Co. Left to right: Toy Rantala, J. W. Hubbard, A. Hangland, C. Jacks, Kenneth Cochrane and C. Weber.

De Laval's Jim Noble

James Noble, three years with De Laval-Pacific Company, at San Francisco, and recently assigned as Bay Area district sales representative for De Laval separators. "Jim" Noble has been with Robert Hood, who is now Manager of Sales, Industrial Division, with headquarters at 61 Beale St., San Francisco.

Todd Supplies Oil Burners For Prototype Vessels

Todd's Combustion Equipment Division, Elmhurst, L. I., N. Y., has received an order from the Foster-Wheeler Corp. to supply the U. S. Maritime Commission's prototype vessel with 8 oil burners. These burners will fire two steam generators. Each of these steam generators will be fitted with four Todd Model "D-16" double casing, forced draft type oil burning air registers—each register to be complete with Todd variable capacity type mechanical pressure atomizing fuel oil burner, branch oil supply connection and branch oil return connection. The air registers are to be fully insulated for use with preheated air supply for combustion. The boilers will be designed for 1,000 lbs. working steam pressure.

The prototype cargo ship will serve as a basic model for large-scale shipbuilding in any future national emergency. The new design will influence the future composition of the American merchant fleet from a competitive point of view.

The ship will be built wholly as a Maritime Commission project. Its cost will be charged to a $5,000,000 allocation of contract authority given the Commission by Congress in the 1949 Independent Offices Appropriation Act.

With his wife sick in bed, hubby—and pandemonium—reigned supreme in the kitchen. But the tea was missing. He looked high and low and finally called to his wife: "I can't find the tea, dear. Where do you keep it?"

"I don't know why you can't find it," came the peevish reply. "It's right in front, on the cupboard shelf, in a cocoa tin marked 'matches'!"

Lurline's Westinghouse Mariners

Mrs. R. A. Neal, R. A. Neal, Vice-president in charge of Pacific Coast Operations, Westinghouse Electric Corp., Mrs. W. J. Maytham and W. J. Maytham, Pacific Coast District Manager, Westinghouse Electric Corporation, snapped as they sailed for Honolulu on the May 3rd departure from Los Angeles.

New Diesel in Honolulu Tug

After long service in the inter-island trade, the Young Bros.' tug *Mahoe* has been fitted with a new Fairbanks-Morse engine.

The boat was built in Seattle in 1925 and has general dimensions of 110 ft. 6 in. length, 24 ft. 10 in. breadth, and 14 ft. 6 in. depth.

The twin engines are Fairbanks Morse No. 31 2-cycle 440 HP each with Fairbanks Morse No. 36 auxiliary marine generator.

The vessel will be given its trial run with the new equipment early in July and a more detailed story will appear in a later issue of the Pacific Marine Review.

McCone Named Under-Secretary Of Air

President Truman has named John A. McCone as Under-Secretary of Air. McCone is president of Joshua Hendy Iron Works, (of which Pacific Tankers is a division), and chairman of the board of Pacific Far East Line, Inc., San Francisco.

McCone was primarily responsible for the military aspects of the report of the President's Air Policy Commission, of which he was a member, and is credited for the recommendations which led to the increasing emphasis on air power in proper defense planning. He served as Deputy to the late Secretary Forrestal, advising him on all air policy matters and the preparation of the '49-'50 Budget for the Military Establishment.

As president of the Bechtel-McCone Corporation, McCone was directly responsible for the construction and operation of the Birmingham Modification Center at Birmington, Ala. This facility modified, tested and prepared for battle, all B-24 bombers manufactured at the Willow Run Plant, as well as a high percentage of all B-29 bombers produced during World War II.

1950 Lloyd's Yacht Register

Lloyd's Register of American Yachts, 1950 edition, is now in circulation. In general, power craft of over 35 feet and sailboats with a sail area of 350 square feet are included.

Conversion of ex-government craft continue at approximately the same pace as in the past year or two.

There is a completely revised Flag Section. Only owners and clubs who are regularly or occasionally entered in the subscription lists will have their private signals or burgees shown.

Copies of the complete volume (yachts, owners, clubs, flags, etc.) can be obtained for $20 from Lloyd's Register of American Yachts, 17 Battery Place, New York 4, N. Y. The Flag Book (colored illustrations only) is available at $7.50.

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Radar Ruling

The Federal Communications Commission has ordered adoption, effective January 2, 1951, of long-awaited permanent rules governing marine radar operator licensing requirements.

Since the end of the war shipowners have been utilizing radar under a temporary waiver of certain restrictive operator license requirements of the Communications Act. These would have required this instrument of navigation to be operated by the ship's radio officer or other FCC licensed personnel.

Under the FCC decision, no specially licensed personnel must be carried as a condition to using the radar, and requirement of any FCC operator licensee to operate ship radar has been permanently waived.

Other aspects of the ruling will require the keeping of a brief installation and maintenance record, and complicated repairs or maintenance work will be performed only by individuals holding first or second class radio operator licenses who have also passed an FCC examination qualifying for a ship radar endorsement.

Pre-Installation Tea For Women's Group

Amid the charming surroundings of the James S. Hines home in Oakland, seventy members of the Women's Organization for the American Merchant Marine joined with Mrs. Hines for silver tea on Thursday, June 1. Highlights of a lovely afternoon were selections by Mrs. B. N. DeRochie in her inimitable style, and banjo-piano numbers by Mrs. Harry Price and Mrs. William Grownley. An afternoon to be remembered.

On June 13 the group will meet in Marines Memorial Building for installation of officers. With Mrs. William Robinson as installing officer, Mrs. Mervin E. Shigley will take over as president, assisted by the following:

Mrs. Jack Harris, 1st vice president; Mrs. John M. Van Orden, 2nd vice president; Mrs. G. A. Dundon, treasurer; Mrs. James Flanagan, recording secretary; Miss Alma Canavan, corresponding secretary; Mrs. Frances B. Waters, historian.

Directors are as follows: Mrs. M. J. Gigy, Mrs. Leslie L. White, Mrs. James S. Hines, Mrs. Duane Tweeddale, Mrs. Eugene Hoffman, Mrs. Alfred E. Pittman.

Combustion Control Operation

Newest bulletin from Hagan Corporation, Hagan Building, Pittsburgh 30, Pennsylvania, is "The Hagan Marine Combustion Control System and How It Operates." It reproduces a series of advertisements picturing and explaining salient features of Hagan Combustion Controls—for example, a discussion of the "how" and "why" of making steam pressure the controlling factor for air flow, and the latter in turn for fuel flow. Technical literature containing more detailed data on the Hagan control system also is offered.

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Sun Ship Organization Changes

Retiring President John G. Pew, Sun Shipbuilding & Drydock Company.

At a meeting of the Board of Directors held May 1, 1950, Richard L. Burke, Vice President of the Sun Shipbuilding and Dry Dock Company, was elected President of the Company. He succeeds John G. Pew who has resigned as head of the plant.

Burke was employed in the hull drafting department of New York Shipbuilding Corporation for nine years before becoming associated with Sun Ship in 1916. He has had a part in constructing all of the 525 ships launched at Sun Ship. In 1917 he became Chief Draftsman in charge of structural work. He was promoted to the position of Vice President and General Manager in 1927.

John G. Pew, Jr., was re-elected as Vice President, and Alton A. Norton, Superintendent of Hull Construction, was elected Vice President.

Norton attended the Webb Institute of Naval Architecture and entered the drawing office of Harlan and Hollingsworth when he graduated in 1916. Several months later he went with Sun Ship and has been associated with them ever since with the exception of a year and a half spent in ship construction on the Pacific Coast during 1918 and 1919. He served in supervisory positions in the yard and in 1926 was made Superintendent of Hull Construction.

William Craemer was re-elected Secretary and Treasurer. Controller Charles H. Doyle was elected Assistant Treasurer and Granville D. Landing was elected Assistant Secretary.

President Richard L. Burke, Sun Shipbuilding & Drydock Company.

J. N. Pew, Jr., was re-elected Chairman of the Board.

Other Directors are: J. Howard Pew, former President of Sun Oil Company; Robert Dunlop, President of Sun Oil Company; Samuel B. Eckert of Sun Oil Company; John D. M. Hamilton; Richard L. Burke; John G. Pew, Jr.; William Craemer and Alton A. Norton.

Hall Laboratories Silver Anniversary

Its silver anniversary was recently celebrated by Hall Laboratories, Inc. Honored was Dr. Ralph E. Hall, international authority on industrial and municipal water-conditioning, who served as director of Hall Laboratories, Inc., since it was founded by Hagan Corporation in 1925. Dr. Hall is relinquishing active direction of Hall Laboratories, Inc., to Dr. Everett P. Partridge, although he is continuing his scientific work as consultant with the firm, and will remain a member of the board of directors. Dr. Partridge has been director of research for Hall Laboratories and another Hagan subsidiary, Calgon, Inc., for many years.

Dr. Hall holds the Modern Pioneer Award given by the National Association of Manufacturers, and the first Pittsburgh Award for Outstanding Service given by the American Chemical Society, Pittsburgh

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Section. He is regarded throughout industry as the founder of scientific water-conditioning. His work led to the re-discovery of "Graham's Salt"—which had spent its first century on the laboratory shelf—and successful application of this then-unknown phosphate material to the job of keeping boiler water in proper chemical balance.

This use of what came to be known as "Calgon" or "sodium phosphate glass" pioneered its broad application today in all kinds of water-conditioning tasks—from household soap-and-water bathing and laundering to key roles in chemical, textile, leather, paper and food industries.

Dr. Hall and his associates, in the 1930's and 1940's developed an imposing array of other scientific discoveries in their specialized field. They successfully attacked problems of boiler steel embrittlement, scale, corrosion and the effects of oxygen, dissolved oxygen and silica on boiler water performance. Techniques that permit precision control of water chemistry, and use of potassium water-conditioning, are among their wartime and postwar accomplishments.

Founder and board chairman of Hagan Corporation and subsidiary companies is J. M. Hopwood.

Dr. Everett P. Partridge, director of Hall Laboratories, Inc., presents a memorial album to the honor guest, Dr. Ralph E. Hall, at their Silver Anniversary celebration. Between them, seated, is D. J. Erikson, president of Hagan Corporation and subsidiary companies. To the right are the principal speaker, Dr. A. C. Fieldner and E. M. Chaney.

A determined man can do more with a rusty wrench than a loafer can with all the tools in a machine shop.

Diamond Power Organization Changes

William J. Fitzburgh has been elected Executive Vice President of the Diamond Power Specialty Corp. For the last five years he served as Assistant to the President and Chief Engineer. He joined the Diamond organization in 1929 as a sales engineer in the New York office, and eight years later moved to Detroit as Chief Engineer, which position he held for seven years. Prior to joining Diamond, he worked for five years as sales engineer and radio specialist for the General Electric Company, after receiving his M. E. degree from Stevens Institute of Technology in 1924.

W. F. Cantieri has been appointed Chief Engineer. In that capacity he will have charge of the Research, Development, Drafting, Standards and Engineering Order Departments; he will also handle patents. Cantieri graduated from the Virginia Polytechnic Institute in 1935 with the degree of B.S.M.E., and after a year of post-graduate work he received an M.S. degree in Power Plant Engineering. Following diversified industrial and public utility experience, he served in the U. S. Navy during the war. Cantieri was Chief Engineer of the Chapman Chemical Company at Memphis, Tennessee, for two years prior to May 1949 when he joined the Research Department of the Diamond Power Specialty Corporation as Materials Application Engineer.

William J. Fitzburgh

W. F. Cantieri

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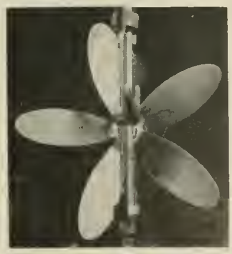

It's a Daisy

New V-Ps of Combustion Engineering

W. P. E. Ainsworth

H. G. Ebdon and William P. E. Ainsworth have been elected vice presidents of Combustion Engineering-Superheater, Inc., New York.

Ebdon joined the company in 1917 and since 1925 has served successively as manager of the Proposition Department; sales engi-

H. G. Ebdon

neer, New York District Office; and assistant general sales manager. In 1941 he was appointed general sales manager of boilers and related equipment. He will continue in the latter capacity, working in association with Donald S. Walker, the company's vice president and director of sales.

Ainsworth entered the employ of the company in 1921 as a service engineer and later became manager of the Service and Erection Department. In 1939 he was appointed general purchasing agent and in 1942 was also made production manager. As a vice president he will continue in charge of purchasing and production for the company's six American manufacturing plants.

Bulletin on Enterprise Engines

A new bulletin featuring the complete line of Enterprise "H Series" Marine Diesel Engines is now available. Formerly known as the "Hendy 30 Series," these engines range from 135 to 265 h.p. at 600 to 900 r.p.m. in 6 and 8 cylinders.

The new 8-page, two-color bulletin describes construction and operating features, with a complete illustrated explanation of the simplified Enterprise fuel-injection system.

Bulletin H-15 is now available from Enterprise Engine & Foundry Company, 602 Florida St., San Francisco 10.

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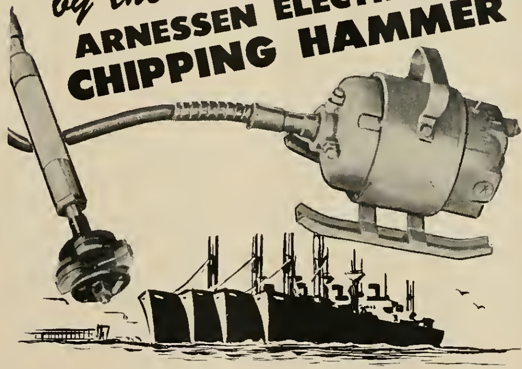

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Meeker and Mills Retire From New York Ship

After nearly 46 years of service with the New York Shipbuilding Corporation, Jacob W. Meeker retired as the Corporation's Purchasing Agent May 1, 1950. Meeker joined the Purchasing Department of the New York Shipbuilding Corporation in June 1904. His entire service with the firm was in the Purchasing Department, where he became Purchasing Agent in 1928.

Meeker is succeeded as Purchasing Agent by Raymond H. Moyer, who joined the New York Ship on October 1, 1900, and was transferred to the Purchasing Department in 1911. Since December 1938 he has been Assistant to the Purchasing Agent.

Albert H. Mills, for the past 20 years associated with New York Ship in various engineering capac-

Jacob W. Meeker Retires

Albert H. Mills Retires

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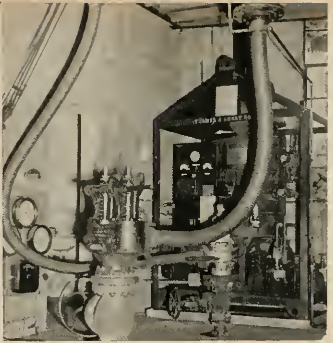

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WEST COAST REPRESENTATIVE: HAVISIDE CO., SAN FRANCISCO, CAL.

ities, retired on May 31, 1950, after nearly 50 years in Shipbuilding.

Mills joined the Cramp Shipbuilding Company in 1901 at the age of seventeen, entering the drafting room in 1903. When Cramp closed in 1927, he went with the Marine Engineering Corporation until 1930, joining the New York Ship as Chief Engineering Draftsman in that year. He was later made Marine Engineer and in 1942, Chief Enginer until 1948. Since 1948 he has been acting in the capacity of Consulting Engineer to the Corporation.

Raymond H. Moyer
New Purchasing Agent

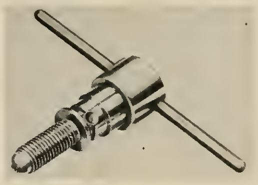
Sperry Loran on Cleveland and Wilson

The Sperry Gyroscope Company announced recent installations of Sperry Mk II Lorans aboard the SS *President Cleveland* and SS *President Wilson.* The Sperry Lorans will permit pin point navigation by these "Twins of The Pacific" in all kinds of weather.

Thomas C. Wilson Announces New Safety Release Pressure Bolt

Thomas C. Wilson, Inc., 21-11 44th Avenue, Long Island City 1, N. Y. has announced a new line of Safety Release Pressure Bolts.

The Wilson-Dunton Safety Release Pressure Bolt is fast proving a necessary safety factor in oil burners, strainers and for securing covers of many types of pressure vessels against unsafe opening.



The Safety Release Pressure Bolt is actuated by the pressure within the vessel. A hole through the bolt body conducts the fluid under pressure to a piston within the bolt head and causes the handle-bar to be moved and held out of bolt turning position.

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Paraffine Company's Representative in Port Engineers Society

James L. Hall, Associate Member of the Society of Port Engineers, San Francisco.

Diesel Operation Topic of June Meeting San Francisco Society of Port Engineers

The June 7 meeting of the San Francisco Port Engineers Society was handled in an unusual way by George Lienhard, Sales and Service Engineer for the Nordberg Manufacturing Company. The meeting was planned around the answers to questionnaires sent out to all the members in advance of the meeting with about a 60 per cent response. The answers posed problems in diesel operation to which the Port Engineers sought answers and Lienhard had such answers with authoritative substantiation.

George H. Lienhard

The question most frequently asked had to do with the burning of heavy fuels. Next in the order of interest was a comparison of operating costs as between diesel and steam. The effects of supercharging 4-cycle diesel engines came next, followed by an explanation of how crank case explosions have been eliminated, the size and weight limitations of marine diesels, and finally Lienhar came up with a brief history of the first motorship.

One of the largest meetings in the Society's histor gave evidence of the earnestness of this group in ad vancing its operational knowledge.

A Russian wolf-hound came over to this country an met an American dog.

"How are things in Russia?" asked the latter.

"Oh, fine, fine," said the Russian dog. "We have fin dog houses and all the red meat we can eat each day

"Then what are you doing over here?" asked th American pup.

"Hell," said the Red dog, "a fella likes to bark onc in a while."

The Scotsman has just had a very embarrassing e perience. He would have sworn the sign on that do said "Laddies."

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George E. Swett & Company Steering New Course

James E. Swett

James E. Swett, of the firm of George E. Swett & Company, announces the closing out of the Refrigeration Contracting Division and henceforth will operate as a Manufacturers' Agency.

George E. Swett & Company and its predecessors was formed in 1920, and will continue to represent Warren Steam Pump Company, Inc., Yorcalbro Condenser Tubes, Pur Air Sales Company, Activated Carbon, Klipfel Regulating Valves, and other well known firms.

Headquarters remain at 256 Mission Street, San Francisco, and the telephone number is YUkon 6-2100 and 2101.

Jim Swett also states that his father, George E. Swett, has completely recovered from the stroke he suffered in August of last year, and is now on the job and will assist him in the Company's affairs.

George E. Swett

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Port of Redwood City

(Continued from page 38)

Company, Permanente Cement Company, Kaiser Gypsum, Division of Kaiser Industries, Inc.

The Port of Redwood City is the home Port for two vessels: the SS *Permanente Silverbow* and the SS *Santacruzcement*, both of which are owned and operated by the Permanente Cement Company.

Since June 1, 1949, forty-one full cargo lots of cement totaling in excess of 350,000 tons have left the Port for various destinations. It is expected that in excess of 100-000 tons of gypsum will be discharged from vessels during the next 12 months' period.

The Leslie Salt Company is now making extensive preparations for the movement of bulk salt through the Port. Officials of the Company anticipate a movement to foreign and domestic points of 400,000 tons annually.

The annual movement of petroleum products through the Port approximates 250,000 tons.

It is expected that canned goods and dried fruit tonnage in large volume from the Santa Clara Valley will start moving through the Port before the end of the year.

Marine Exchange Installs Radar

(Continued from page 66)

radar equipment. All of the operating controls are grouped around the cathode ray tube on the sloping top surface of the indicator unit. Notable among these controls are two designated as the fine and coarse "sea suppression" controls. Adjustment of these controls reduces or eliminates the clutter on the cathode ray tube produced by heavy seas without materially affecting the images of solid objects. These controls are particularly important at the Golden Gate where heavy seas are quite common.

As mentioned earlier, this installation of radar is intended only for observation of harbor traffic. However, it is a relatively simple matter to utilize the information provided by the radar set for the purpose of harbor control as is now being done in few harbors in the world. All that is required is to install a radio transmitter and receiver at the radar location and to provide each of the pilots and pilot boats with portable radio equipment. If this is done, the pilots can receive information on harbor conditions at any time they desire and consequently can proceed more rapidly and accurately to their designated anchorage regardless of weather conditions.

Senate Passes New Trade Zone Legislation

The United States Senate voted on June 5 to approve House Bill 5532 to permit manufacturing and exhibiting in Foreign Trade Zones. The bill now requires final House approval before going to the President for signature. Early action is expected.

MEDALS AND AWARDS. ". . . In accordance with the instructions contained in the Bureau of Naval Personnel Manual, certain decorations, medals, and badges are authorized for the U. S. Navy. In addition, other decorations, medals, and badges may be worn as outlined herein . . ." Included in the above "Navy Uniform Regulations" list of decorations authorized for wear on the Naval uniform are the following *Merchant Marine* ribbons: Distinguished Service Medal, Meritorious Service Medal, Gallant Ship Unit Citation, Mariners Medal, Combat Bar, Defense Bar and three War Zone Bars.

GM in Cargo Vessels

(Continued from page 56)

from the Metacenter to the Center of Gravity (GM). The required GM for safe stability varies with the condition of load. Vessels without any cargo aboard require a large GM for safety, probably as much as 4 or 5 feet, whereas a fully loaded vessel may need a minimum GM of about 9 or 10 inches. A long GM in a fully loaded ship will indicate plenty of safe stability, but the vessel may be too "stiff", and therefore have a snapping action at the end of her roll. This of course is not only hard on the seaman trying to take an equal strain on all parts, but cargo can possibly shift and shoring carry away. The results can be costly. The vessel feels the strain, too.

We can see that the GM is the merchantman's most available way of estimating his stable condition, and of foreseeing the reductions in his stability (and in GM) due to burning fuel and consuming water and stores enroute. Of course there is the probability that a deck load such as lumber will absorb vast amounts of rain and spray to cause an upward movement of the center of gravity. Another thing that causes considerable loss of GM is slack in a tank of liquid. For example, about 200 tons of fuel, placed in a double bottom tank, caused the G to move downward and lengthen the GM. But because this tank was not filled and slack surface remained in the tank, when the formula for slack in a tank was applied, the loss of GM caused by the slack was three times as great as the increase in GM caused by placing this weight down in the bottom of the vessel. However, slack in a tank can be not only a detriment but also a great aid when used to ease a "stiff" ship.

The following are two formulae for finding the approximate GM.

(a) The Rolling Period method—

$$\left(\frac{.22\ (\text{a constant})\ \text{x beam in ft.}}{\text{"t" (the roll period)}}\right)^2 = GM$$

—the roll period is the number of seconds required to roll from upright, over to port, or to starboard, and back to upright.

(b) The Inclining Experiment method — a known weight is moved from a position vertically above the keel, to an outboard position. Measure this distance in feet. Note the angle of heel, or better still, measure how far a 10 foot plumbline moves from its original position near a bulkhead or on a stanchion.

The weight used is to be worked in tons. So

$$\frac{\text{Wt (in tons) x Dist. (in ft) x cotangent of heel}}{\text{Displacement (in tons)}} = GM$$

These two formulae are handy, but of course are only approximate. I propose, in the sequel to this article, to present a method of determining exactly the GM for any condition of load, making use of the details of the vessel's blueprints regarding centers of gravity and the curves of stability. Also included will be the manner in which you may construct your own stability manifest and scale of righting arms for known GM.

I suggest that you locate the following data regarding your vessel, so that you can utilize the data that comes in the next article. From the trial run data, find the KG of the light vessel; that is, the location of the center of gravity above the keel. Be sure that you have aboard the blueprints (a) Capacity plan, and (b) Hydrostatic curves of stability. Until next time, try out those two formulae.

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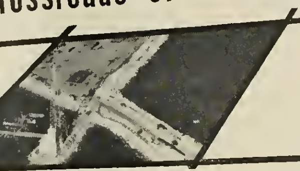

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Kinney Mfg. And King Knight Move

Lyman S. King, President of King Knight Company, announces the removal of the Los Angeles offices of King Knight Company and Kinney Manufacturing Company to 3942 West Slauson Ave., Los Angeles, where sales and services will continue under the direction of Roy A. Woltman.

The Coast Guard

(Continued from page 44)

cept is shown with the recent *Omar* case. The tug *Omar* stood out from Honolulu with the tug *Golden Gate* in tow. The Coast Guard warned of an approaching storm and advised the skipper of the *Omar* not to attempt the run to San Francisco. That was on March 27. On the 29th, the *Golden Gate* was cut loose in a sinking condition, while the *Omar* continued to plough its way through the storm of which they had been forewarned.

On the 10th of April, the *Omar* broke down and on the 13th, the Rescue Coordination Center in San Francisco received a last position check from them. An all out search was instituted at once with planes from Coast Guard Air Stations at Long Beach and Seattle joining the San Francisco aircraft, including those of the Navy and Air Force. On the 18th, the *Omar* was spotted and late in the same day, the USCGC *Chautaugua* took it in tow for San Francisco.

After rescue and saving of all possible lives has been performed, certain investigatory functions take effect to ascertain the causes of the accident and to administer discipline where necessary. Approximately twelve marine casualties per month occur in this area, involving fire, heavy weather damage, machinery mishaps, groundings, collisions and death and injury to personnel. The recent fire in No. 2 hold of the *Hawaiian Rancher* was investigated by the Coast Guard here, and recommendations made as to procedures for preventing recurrence of similar fires on other vessels. Such investigations sometimes point the way to improvements that mean greater safety.

Log book entries and other reports of misconduct, negligence, drug addiction, disobedience of orders, incompetency, absence over leave, etc., are investigated and if a basis is found, charges are made against mariner documents. Last year, about 75 hearings were held involving one or more licensed and unlicensed mariners (in one case alone, 30 seamen were charged—and suspended without probation) and disciplinary action was taken against 50 documents, exclusive of the one case mentioned.

The Coast Guard has a long distinguished history, dating from the Nation's earliest days. Throughout this history, its officers and men have maintained a tradition of service to humanity. In time of peace, the Coast Guard, under the Treasury Department, is an agency for the protection of life and property as well as for law enforcement. During a war, under the Navy, it goes into immediate action as one of the Nation's fighting forces. Its outstanding record in war is matched by its peacetime accomplishments in bringing security and safety to the ever dangerous calling of the mariner.

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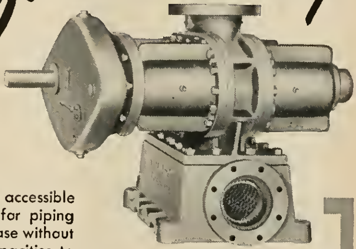
For below deck installation Kinney Model HQAC is mighty compact, yet accessible for servicing. The suction base with removable strainer is flanged for piping from either side, and the cylinder assembly can be removed from the base without disturbing the suction lines. Available plain or steam jacketed — capacities to 3000 bbls./hr.

Write for Bulletin L48.



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Hamer Rigid Line Blind Valves

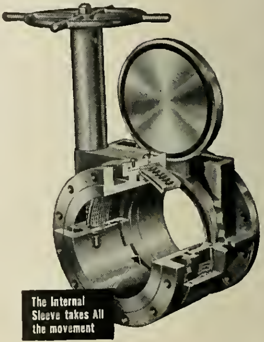
The new Hamer "Rigid" Line Blind Valve utilizes an internal sliding sleeve to seal against and release the spectacle plate without movement or expansion of the pipe line. The sleeve is moved against or away from the plate by means of a ball bearing mounted ring gear actuated by turning the hand wheel. Operation is not affected by misalignment or expansion and contraction of the pipe line.

Hamer Rigid Line Blind Valves conform to A.S.A. Standards for face-to-face dimensions of steel wedge gate valves. Quick, easy hand wheel operation eliminates sledges, wedges and wrenches. Fully enclosed plate receptacle eliminates fluid loss and fire hazard. The rigid body is not affected by line strains caused by misalignment of the pipe line or expansion and contraction due to changes in temperature and pressure. Free operation under all conditions is the big feature of Hamer Rigid Line Blind Valves. A solid plate assures a permanent, positive shut-off.

The operator can reverse the spectacle plate in less than a minute.

Rigid line blind valves made of steel are available in ASA 150 lb. and 300 lb. classes in sizes from 6″ to 12″.

Spectacle plate packing rings are available in a variety of materials to meet service requirements.



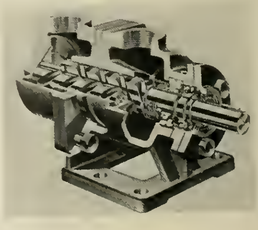
Northern California representative for Hamer products is the Ben W. Brundage Company, 3871 Piedmont Avenue, Oakland.

For further information, write for Bulletin 350. Hamer Oil Tool Company, 2919 Gardenia Avenue, Long Beach 6, California.

De Laval's New IMO Pump

The new De Laval-IMO Series A313A pump is designed for pumping petroleum products and other light or viscous fluids in volumes to 85 gpm against pressures up to 150 psi, as required for rotary and steam atomizing oil burners, oil transfer, lubrication, hydraulic systems and similar service.

Like all other IMO pumps, the A313A is extremely simple. There are only three working parts — a power rotor and a pair of sealing or idler rotors which mesh with the power rotor in such a manner that liquid is conveyed continuously from inlet to outlet. This De Laval-IMO can be direct-connected to electric motors, turbines or other high speed drivers without reduction gearing, belts or chains.



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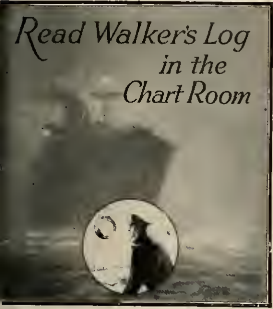

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Naval Tank Cleaning Program

(*Continued from page 49*)

that these vessels be given a thorough hot water Butterworthing similar to a conversion from black to diesel fuel. The purpose of this cleaning was to remove all loose scale and as much free oil as possible without the use of chemical, so the tanks would be relatively clean to be dehumidified during the lay-up period. In an emergency the tanks on these vessels would be ready for either Navy Special or Diesel fuels with little or no cleaning, and for gasoline by only carrying out the final step in a conversion from black oil to gasoline. At the start of this program the Navy again called on Sopac to assist in cleaning the vessels involved by the "Sopac Method" which had been adopted by the Navy to obtain the desired results. Since the inception of this current program Sopac has cleaned a number of the vessels involved, both at San Francisco and Los Angeles Harbors. Vessels cleaned by other contractors are also performed according to the "Sopac Method." Unlike the tank cleanings performed in the Gulf and Atlantic Coasts where the Navy supplied the necessary equipment the present tank cleanings have been performed with Sopac's own equipment, which included heat exchangers, high pressure electric pumps and the necessary Butterworth machines, hoses, etc. through a license from the Butterworth System.

The Sopac Method

The Sopac Method of Tank Cleaning for converting a tank vessel from black oil to gasoline in a one step operation consists of:

(1) Cleaning out the heating coils and cargo venting systems.

(2) A very thorough hot water Butterworthing, utilizing high temperature and pressure (a portable heat exchanger and pressure pumps are installed on deck to obtain the correct temperatures and pressure) as well as rigging the Butterworth machines within the tanks so that each section of a tank will be given a series of drops from the deck right down to the bottom of the tank. This is accomplished by drilling holes in the deck and utilizing special winches designed for this work. The purpose of this wash is to remove as much scale, sediment and free oil as possible prior to the chemical wash, as the chemical solution is used over and over again and would become contaminated and its strength reduced if this initial wash were not performed. Upon completion of this wash the tanks are mucked out, that is, the remaining scale and sediment is swept up from the bottoms and removed from the tank. During the mucking any blisters that were not broken by the Butterworth stream are broken open to permit the chemical solution to wash

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the oil out from behind during the ensuing chemical wash.

(3) A chemical wash consisting of the following steps:

(a) Mixing a chemical solution consisting of fresh water tri-sodium phosphate, caustic and a wetting agent in one or two of the ships cargo tanks.

(b) Installing a heat exchanger for heating the chemical solution and booster pumps for pumping it at high pressure through the Butterworth machines.

(c) Rigging the machines within the tanks in a similar manner to that performed in the initial hot water wash, and making drops in each section from the deck down to the bottom.

(d) Mucking out the bottoms of the tanks to remove any remaining scale or sediment and a touch-up scraping of any contaminated areas.

(e) Hand hosing the tank bottoms with a hot chemical solution.

(4) A hot water rinsing of the tanks to remove the chemical solution from the tanks. This rinse consists of the following steps:

(a) Rinse the tanks with hot water through the Butterworth machines in a similar manner to that performed in the initial hot water wash.

(b) Muck out the bottoms of the tanks to remove any remaining scale or sediment.

(c) Hand hose the tank bottoms thoroughly with hot water to be certain that all traces of the chemical solution have been removed. It is important that this be done as any remaining chemical solution may have an effect on the inhibitors in the ensuing cargoes to be carried in the tanks.

(d) Check the tanks with a few drops phenothyline solution to be sure that the chemical solution has been removed.

The main cargo and stripping lines are cleaned simultaneously with the tank cleaning both with chemical and hot water.

Honolulu Fireboat

(Continued from page 46)

statute miles per hour less speed as a twin screw fireboat for the same fuel consumption and would require a 6.5% higher capital investment.

Bowes type fireboats have been designed in various capacities from 3000 gpm to 12,000 gpm. The Houston and Honolulu boats are shown on these pages.

"T. S. Petersen"

(Continued from page 54)

a Bethlehem double reduction gear cross compound turbine, delivering 12,500 shaft horsepower at 103 RPM, and a speed of 17 knots. The four-bladed propellers for these vessels are of the largest of the solid type ever made, being 22 feet in diameter, weighing about 58,500 pounds, and cast in one piece of manganese bronze.

Keel of the *T. S. Petersen* was laid September 7, 1949, and the owners are to take delivery on June 30, after trials.

The specifications and plans for this class of tanker were featured in the December '48 Pacific Marine Review following the award of the contract to the Bethlehem yard.

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Pacific Marine Review

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Pacific MARINE REVIEW

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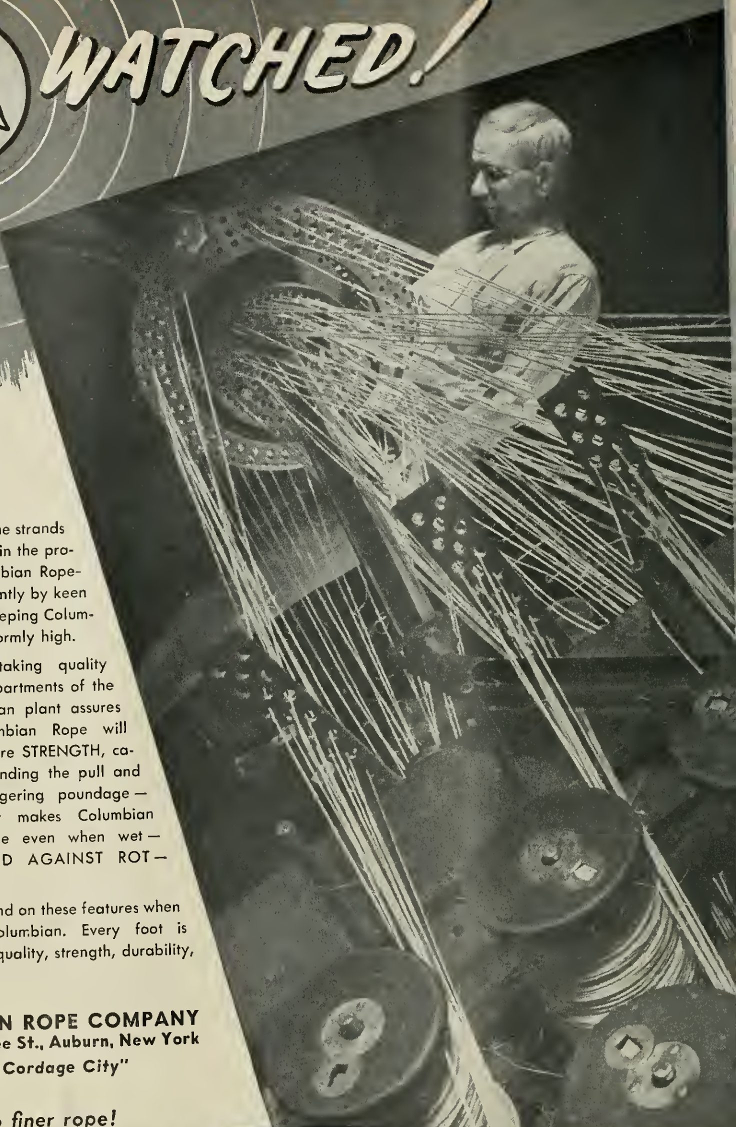

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Pacific MARINE REVIEW

Must It Always Take a War?

THERE seems to be a familiar bogy that military men should not head our National Government—should not even head important departments such as the Maritime Board. The need for military alertness in this troubled era suggests that it is about time for such thinking to be reviewed. Our three wars within this century have developed during administrations that were world-conscious but not defense-conscious, and that placed absolute reliance on diplomatic processes. The "too proud to fight" and "I hate war" and "it will never happen again" attitudes have failed.

In the present unhappy situation there were plenty of indications of danger in the Orient, and elsewhere. By disregarding them and deliberately cutting down our defense potentials by reducing aircraft production (2,300 planes this year against 19,000 in the pre-Pearl Harbor year), moth-balling the carriers, battleships, Navy tankers, and other vital craft, and cancelling new naval and air construction authorized by Congress and urged by defense departments, the lack of military thinking led to tragic ends.

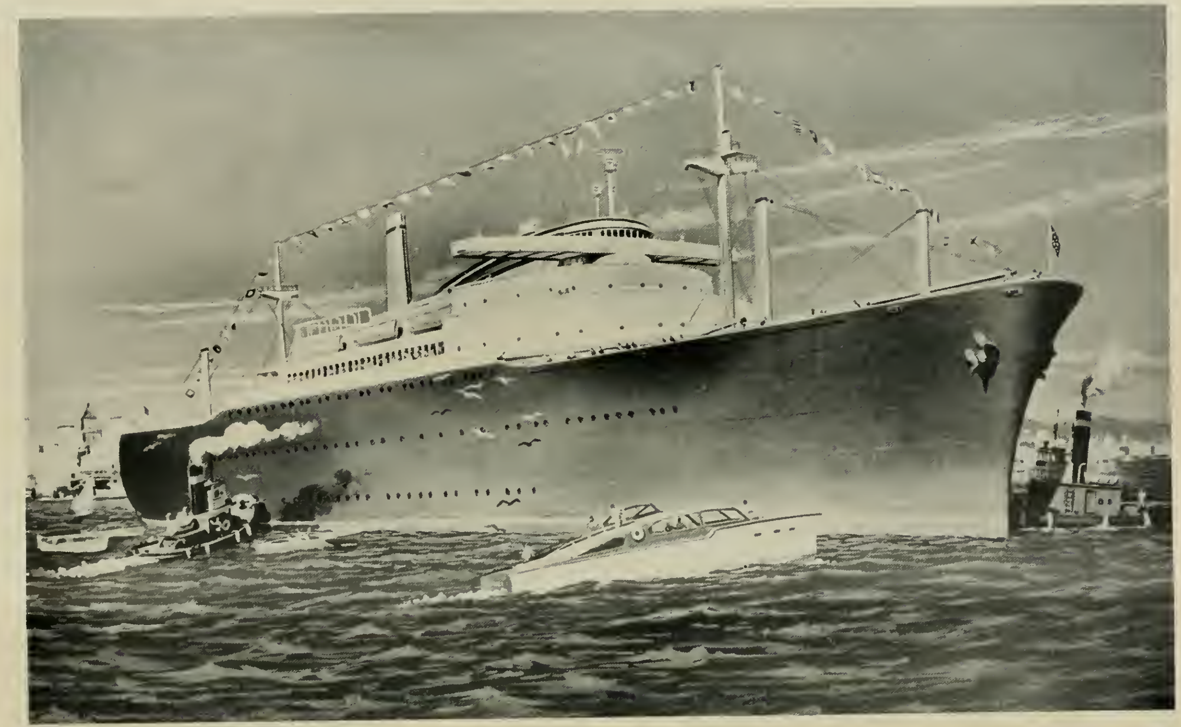
It is so also with the Merchant Marine. In the face of President Truman's statement that "our national security requires an efficient nucleus of merchant shipping and ship building, adequate to permit such expansion as may be required by a future emergency" we find him practically telling the old Maritime Commission to go even slower than it had been going, and then abolishing the Commission and appointing a temporary Board which would "make no important decisions for three months." And we find three top government men suggesting that foreign merchant ships be permitted to carry more of our cargoes to help them pay their bills.

The Navy and Merchant Marine can control the seas, which constitute 70% of the earth's surface against the 2% of U. S. land area available for basing air operations. The Merchant Marine and Navy should be kept at high operational efficiency instead of obstructing it by such devices as Panama Canal tolls. It is important to the country that the Merchant Marine grow and prosper. And instead of the manufacturing activities carried on in Navy yards, Navy money should be used for continuing fleet operations, training and research. The friendly seas have been our bulwark; let's not scorn their use.

Gatov For the Maritime Board

Having on many an occasion praised the handling of shipping affairs by Albert Gatov, able President of the Pacific American Steamship Association, we join in urging his appointment to the new Maritime Board.

There can be little doubt that lack of practical shipping knowledge has been a handicap to the old Commission, from whose membership active shipping men were excluded by the Merchant Marine Act. The broadest maritime experience, plus the confidence of the industry, will be needed by the new Board, and Gatov has both.



THE PRESIDENT JACKSON

This is the way the ship will look when completed. The profile differs from other big ships and, because of the lines of the superstructure and the new type stacks, she will be readily recognized in the ports of the world.

American President Lines Round-the-World Ships

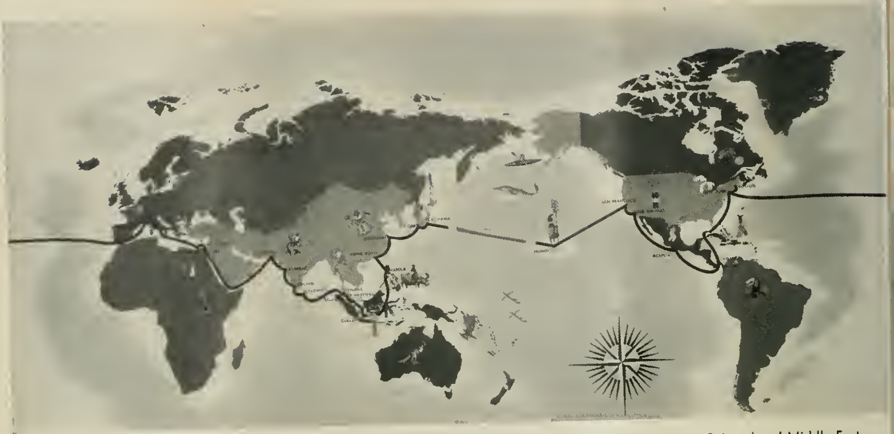
(Continued)

— Paradise at Sea

Since the first intimation, in the January 1947 *Pacific Marine Review*, of American President Lines' ship construction program, the progress of the plans of the V-2000 ships has been the subject of detailed feature articles in the issues of February, March, May, October and November 1948, April, June and August 1949. The March 1947 issue contained the deck and machinery arrangement plans; October 1947 announced the call for bids; January 1948 reported the bids; and April 1949 showed a keel laying. There have been important changes in the plans during these three and a half years and changes are still being made in the equipment and accommodations.

WITH the launching of the *President Jackson* on June 27th, the American President Lines continues its program of ship construction. The *President Jackson* is one of three passenger and cargo ships for the round-the-world route, the other two being the *President Adams* and *President Hayes*. These ships have an almost scientifically calculated balance between passenger and cargo spaces as applied to the round-the-world service and are

Launching of the S. S. President Jackson at New York Shipbuilding Corp., Camden, N. J., June 27, 1950. The President Adams and the President Hayes will be launched this summer and the three ships will be completed by next Spring.



Route of the "Presidents," westward round-the-world via the Panama and Suez Canals, touching Hawaii, Oriental and Middle East ports, Egypt, Europe, and back to the United States.

officially designated P2-S1-DN1 V-2000. Costing $12,000,000 each, they will carry 204 passengers, all first class, and 517,000 cubic feet of cargo.

Each V-2000 liner is 536 feet in overall length and has a beam of 73 feet. Their cruising speed will be 19 knots, their displacement 19,600 tons. Each will be manned by an all-American crew of approximately 181 officers and men, most of them U. S. Naval Reservists or graduates of the Maritime Commission Training School at Alameda, Calif. All personnel of the Steward's Department will come fresh from a refresher course at the school when they board the vessels for their maiden trips.

The ships will have sun and sports decks, an out-door swimming pool and a children's play-room with a nurse in attendance. They are air-conditioned throughout, even to the crew's quarters.

Because the routes the American President liners will follow lie through tropical or semi-tropical waters for much of each trip around the world, the three new American President Lines' ships will be equipped with the most elaborate and modern refrigerating equipment which has yet been built into any ship.

An electronic precision indicator will give instant readings of the atmospheric condition in every part of the ship, all transmitted to a single control-room. Tiny differences in temperature can be corrected immediately. In the cabins and public rooms, the lounge, bar, dining-saloon or writing rooms, this control will make for increased passenger comfort. In the food storage and cargo holds it will assure perfect protection.

Each voyage of one of the new ships will involve payment of $275,000 in crew's wages and a maintenance outlay of about $40,000. There will be an $80,000 insurance bill to be paid for each voyage.

The oil-fired boilers, which provide power for the steam-turbines with which the S. S. *President Jackson* is equipped, will consume 36,800 barrels of fuel oil, costing $60,000, each time she girdles the globe. Keeping the ship in spic and span condition means, among other things, that the *Jackson's* crew will brush 400 gallons of paint on plates and bulkheads during every trip.

The ship's stores for each voyage sound like an inventory for a metropolitan department store—with a large food market as one department.

Packed away in the refrigerated storage rooms will be 425,000 pounds of food, valued at $97,000, of which approximately 3,000 pounds will be consumed daily. The Chief Steward will be responsible for 37,000 pieces of silverware, 12,500 pieces of china, 37,500 pieces of linen, 3,400 uniforms and 6,000 pieces of glassware.

In addition to the three V-2000 type vessels, President George Killion recently announced his company's plans for early construction of four more deluxe combination passenger-cargo liners, also for the round-the-world service. The latter would accommodate only 60 passengers each but would provide about the same amount of cargo space as the V-2000; there is also a study being made of the possibility of building two additional ships of about 900 feet in length for transpacific service. Comparing the V-2000 with the *President Cleveland* class, the latter is 74 feet longer and 2½ feet wider. The speed is about the same.

At the launching of the *President Jackson* important addresses were made by Vice-President of the United States Alben Barkley, President George Killion of American President Lines and President T. H. Bossert of New York Shipbuilding Corporation. Distinguished guests included diplomatic representatives of most of the seventeen countries at which the *President Jackson* will cal during her hundred day voyage. The lists of ports of call like a roster of the world's most romantic spots, includes Honolulu, Yokohama, Kobe, Hongkong, Manila, Djakarta, Singapore, Penang, Belawan, Colombo, Cochin, Bombay, Port Said, Alexandria, Naples, Genoa, Leghorn, Marseilles, Barcelona, Boston, New York, Havana, Los Angeles and San Francisco.

Freight Space

These vessels are really combination passenger and cargo liners. Each will contain approximately half a million cubic feet of cargo space. Of this, 400,000 will be for dry cargo, 60,000 for reefer or refrigerated cargo, and the balance, about 48,000 cubic, will provide the very latest in deep tanks for liquid cargoes. Their cargo facilities have been specially designed for the trade they serve around the world.

In addition there will be specie tanks, numerous special cargo lockers, and special hatch covers which will be extremely fast in operation. This new type hatch cover can be spread in a minute and a half, in the event of a sudden storm, whereas the conventional style of hatch cover requires as long as 20 minutes to cover a hold completely.

The liners will also be equipped with a dehumidification process that air-conditions the holds and prevents damage from sweating; and the ships will have the most modern fire and smoke detection system throughout all cargo holds. As a matter of fact everything known to science today for the protection and safety of cargo, and speed of handling, is found on them.

Defense Convertability

Built for peaceful overseas trade, the S. S. *President Jackson,* like her American President Lines sister ships, *President Adams* and *President Hayes,* can be readily converted to an Attack Transport in time of war.

Extra-heavy steel girders under the decks provide locations for gun mounts—if they are ever needed. Yet round-the-world passengers enjoying deck sports, or just watching the sea from deckchairs, will never be conscious of the fact that the scrubbed planking has been stiffened for possible war needs.

The hull of the *President Jackson* has been divided by extra water-tight compartments below the waterline. Their number far exceeds the requirements for ordinary passenger vessels. Those extra bulkheads and water-tight doors, built to rigid Navy specifications for combat-type vessels, make the new ships as hard to sink as a tightly-corked bottle.

Also below the waterline, at the point where the bow curves to meet the keel-line, is a strange, plow-like attachment to which, in time of war, the anti-mine devices called "paravanes" would be fastened.

Interior bulkheads, which will divide the cabins and public rooms into luxury interiors for air-conditioned, tropic travel, have been located and installed according to a carefully worked out plan for easy removal. If the *President Jackson,* or her sister ships, are ever needed to carry American fighting men — instead of peaceful American travelers—quarters for 2,500 men in uniform can be provided in a matter of hours, from space normally given to the high-seas comfort of 204 passengers, all first class.

Public Rooms and Passenger Accommodations

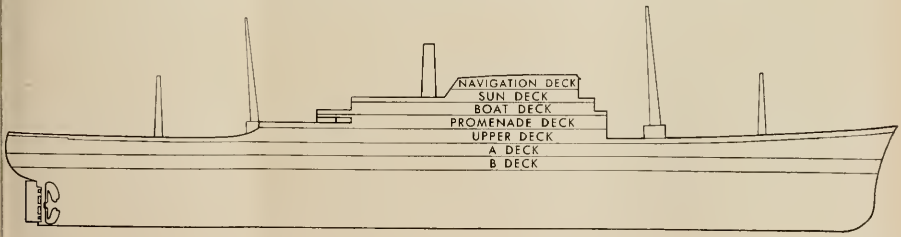
The main dining room is a spacious apartment 44 feet fore and aft by 70 feet in the beam, with an offset 14′ by 40′ on the after bulkhead to house the stair landings, the elevator shaft and the entrance trunks to the galley. Doors to the galley are opened by electric eye. Those on the port side open only into the galley, those on the starboard side into the dining room. There is a clear deck area of 2500 square feet after deducting this offset. A room of this size and shape should lend itself very nicely to decorative treatment and, with modern air conditioning and adequate illumination, will make a very pleasant and appetizing eating place.

The dining saloon is below, and except under most extraordinary conditions, all passengers may be seated for dinner at one time.

The deck is carpeted and the ceiling sound proofed so that service is quiet and is performed without confusion or noise. You will not be conscious of all of the moving about that is necessary for rapid and efficient and courteous service. All doors from the galley will operate automatically without noise or clatter, either from trays being pushed against the door or from swinging of the door against the door jamb.

The lighting effect in the dining saloon is being given special attention. The outboard sides of the dining

This profile, naming the decks, will be helpful in identifying the features mentioned in these pages.



saloon will give the appearance of looking out into the sunlight through slightly frosted glass.

Tables are being arranged for 2-somes, 4-somes, 6-somes, and 8 for the Captain's table. Banquettes have been provided for the outboard sides of the dining saloon.

The lounge is designed for additional use as a place of worship on Sundays and will also be used for moving pictures and for such other entertainment as is provided in the evening. The lounge is quite extensive and extends from the promenade on one side of the ship to the promenade on the other side. It opens onto the promenade deck and in addition into the Club room. It will be exceptionally well furnished to provide the maximum of comfort.

The Club Room is immediately aft of the lounge and extends for a height of 2 decks. On the starboard side immediately over the club room bar, is a balcony of considerable extent which is reached by a very artistic curved stairway. The balcony will contain enclosed card-room and an open space similar to the mezzanine of many hotels. In addition, it will contain a writing room of considerable size.

◄

Top: A large 4-berth cabin. The gay colors of the sea and the outdoors have been skillfully applied to create bright, cheerful staterooms.

Bottom: 4-berth cabin made up for daytime. Staterooms are in four predominant color schemes: beige, green, blue and tan.

A small 2-berth inside stateroom.

Another view of a 4-berth cabin. The wall paneling is of the grained pattern so popular in modern construction.

Immediately aft of the club room is the swimming pool. Doors from the club room lead to the area of the swimming pool beach. Other doors lead from the club room to the promenade, port and starboard of the club room.

All public rooms have sound proof Marinite ceilings and are air conditioned with temperature set by the air conditioning machines and not available for control by passengers.

All joiner work is by Martin-Parry, with Johns-Manville Marinite the outstanding surface material. Marinite is a light weight, incombustible solid panel material, of high insulating value, made of asbestos fibre with an inorganic binder. Marinite Marine veneered surfaces will be in the passages and passage stairways. Passenger staterooms will be Marinite with selected hardwood veneer on exposed sides. Public rooms also will be Marinited.

The passenger sleeping apartments are all outside rooms with the exception of eight on the upper deck. Every passenger room is equipped with private toilet, wash basin and shower with running hot and cold fresh water. Every passenger bedroom is equipped with an automatic dial telephone for intra-ship communication and for connection through radio to shore or other similarly equipped ships.

A modern laundry is provided and equipped with all the latest machinery to take care of all passenger needs.

Among the innovations, will be a novel arrangement by which night news broadcasts from American stations will be recorded aboard the ship and then played back over the ship's public address system during the passenger breakfast hour—a "morning newspaper" fresh from home, every day.

The Staterooms

The rounded front of the superstructure permits unique stateroom arrangements on the upper deck, promenade deck and boat deck, as indicated in the diagram on page 44. Called radial rooms, they are wedge-shaped, and as spacious as the average living room (14′ by 20′).

The radial room is designed with one sofa bed and two berths, an upper and a lower on the opposite side of the room. It is an outside room with a single port. The room has a private bath as do all the staterooms for passengers on these vessels. Some rooms are equipped with tub baths with shower over, although most of the rooms are fitted with showers without the tub. The bathroom has attractive checkered tile with a bit of color and is non-skid. This stateroom is carpeted wall to wall. The bulkheads are of fire resistent material finished in light shades of veneer wood. Liberal use of mirrors is evident from the picture. These mirrors have a very faint tint that reflect a pleasing light. The coffee table in the picture is a combination coffee table-vanity bench, the coffee table top being hinged, to uncover the cushion seat below. The lighting is mostly of the cove type and has been given special attention. A number of these rooms interconnect through sliding doors with the room adjacent to form either a two-room suite for people traveling together or to provide a living room-bedroom combination through arranging of the portable furniture. Rooms are completely air conditioned, the control being at the finger tips of the passengers. The air conditioning unit is hidden over the doorway to eliminate from view this usually objectionable piece of equipment. A wardrobe is installed for each passenger and a full length mirror is attached to either one of the wardrobe's doors or to the door leading to the bath room.

The inside rooms are intended either for single occupancy or for two people. There is one sofa bed and one pullman bed over the sofa. There are two wardrobe lockers with full length mirror on one locker door.

Four-passenger rooms on the upper deck extend out to the shell of the ship. The berths are arranged so that three lower berths are provided and only one upper. The interconnecting feature exists in these rooms. A number of the rooms are fitted with bath tubs, and these rooms, in addition, have the feature of trunk storage space which is not available in other rooms.

Music Entertainment Distribution System

One of the most complete music entertainment distribution systems ever to be provided for marine use has been designed and manufactured by the Remler Company of San Francisco.

Remler, pioneer in marine radio and sound equipment, is the largest manufacturer of shipboard sound systems. In this modern system Remler has introduced several innovations for the entertainment of the passengers as well as the crew on long cruises.

By means of forty-five high quality loudspeakers located throughout the vessels many types of programs will be broadcast.

The loudspeakers are concealed and so located that uniform distribution of music and announcements is provided. A choice of program selection and volume level by means of a separate control station for each area is a feature which contributes to the enjoyment of the broadcasts.

Marine type super powered amplifiers centrally located provide the audio power for the sound channels. These amplifiers may be switched to any of seven program sources to bring recorded or live programs to passengers.

Long range radio equipment will bring radio programs and news broadcasts to the passengers throughout the voyage while high fidelity FM radio programs will be available within the range of FM broadcast stations.

Two hour magnetic tape recordings of especially arranged muscial selections are distributed over the system as well as disc recordings of any standard, low-pressure or microgroove type. This equipment is automatically controlled and requires a minimum of attendance in operation.

Remler is also supplying a marine type portable public address system for use with the ship's orchestra and for announcing special events and activities in local areas such as the Game Deck or Swimming Pool. Means are provided for connecting the portable system to the main sound distribution system so that local events may be broadcast. Recording equipment is also provided so that any type of program may be recorded on magnetic tape or on recording discs and rebroadcast at another time. The program source is extended to the Solovox-equipped piano in the Club Room and the organ in the Main Lounge.

►

Top: One of the 3-berth radial staterooms. Some of these rooms connect by sliding door with the adjoining rooms to provide suites.

Bottom: Another 4-berth stateroom. Finger-tip controlled air conditioning provides perfect weather in any climate in all rooms.

Ports of Call in 100 Wonderful Days

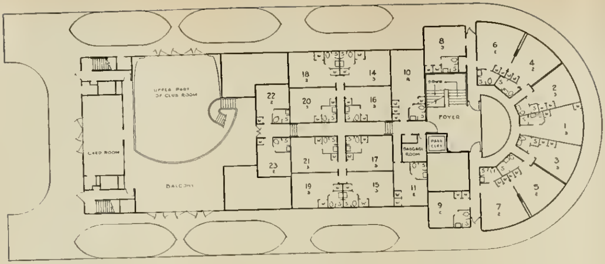
SAN FRANCISCO—Home of American President Lines, and gateway to the Orient.

HONOLULU—In lovely Hawaii, the palm-fringed beaches, the volcanic hills with their unique craters, the fragrance of the hibiscus and passion flowers. Special tours, and then on across the International Date Line, losing a day to time.

YOKOHAMA and KOBE—The ship docks at Yokohama, front door to the Far East, and departs from Kobe, on the other side of Japan, two days later, giving an opportunity to travel across this charming country—to visit its old-world shrines and temples, idyllic countryside and thrilling modern cities. Snow-crowned Fujiyama, the awe-inspiring Great Buddha at Kamakura, the exquisite merchandise in the shops.

HONGKONG—British Crown colony and truly the shopping center of the Orient. The luxurious Tiger Balm Gardens, the floating restaurant at Aberdeen, the breathtaking view from Victoria Peak.

MANILA—The capital of the Philippines. Situated on the Bay of Manila, near the forts of Corregidor and Cavite. Known as the "Pearl of the Orient," Manila has grown to be an attractive city of great charm. Remnants

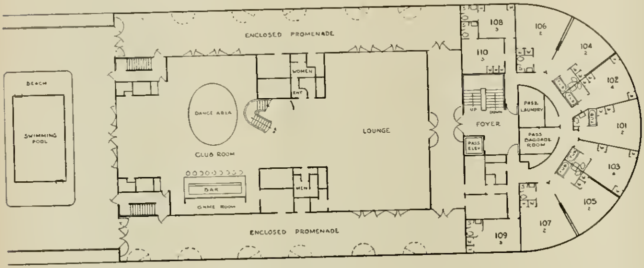


BOAT DECK

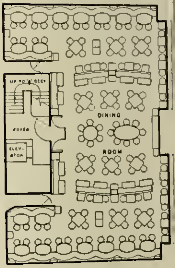
KEY TO ABBREVIATIONS

S Denotes Fresh Water Shower.
TUB " Fresh Water Tub Bath with overhead Fresh Water Shower.
W " Wardrobe.

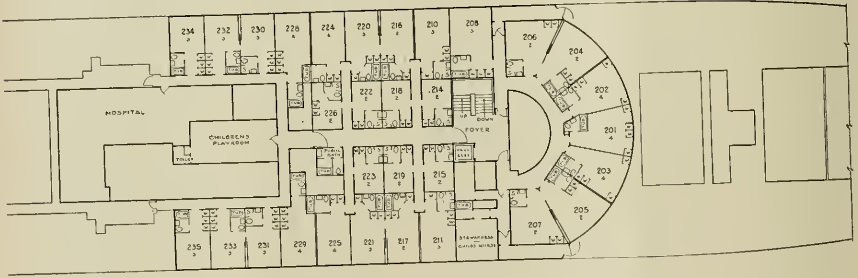
The small number appearing under the cabin number denotes number of beds or berths in the room.



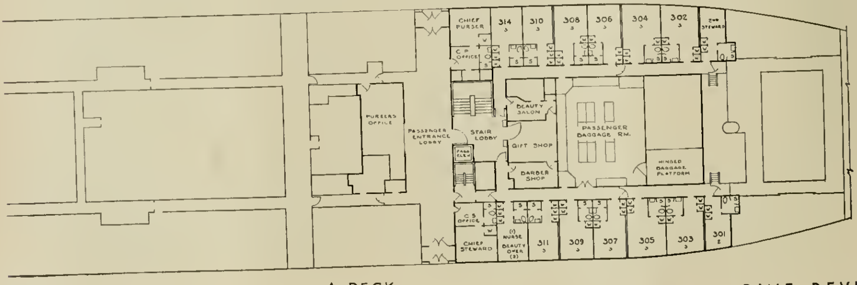
PROMENADE DECK



-B- DECK



UPPER DECK



-A- DECK

of its Spanish culture include the ancient churches and great walls, which afford an interesting contrast to the modern American sections of the city. Special tours may include the many scenic attractions of the Philippine Islands.

DJAKARTA—This Indonesian port is a bit of Holland in a far-away world, even to the European-type canal system which regulates its water-ways. It is a fertile land with foliage of great beauty.

SINGAPORE—Busy capital of the Malay States. The cosmopolitan population includes Malays, Tamils, Hindus, Japanese, Chinese, and Europeans.

◄

The deck arrangement plans will be better understood if they are matched with the profile on page 39. The rounded superstructure fronts contain the radial stateroom combinations, and an idea of their size is obtained from the drawing. Room Nos. 1, 101, and 201, for instance, are 12 ft. 4 in. wide and 18 ft. long. Rooms 230 and 232 are each 10 ft. wide and 16 ft. 8 in: long.

The small diagram on the righthand side of the page shows the table arrangement in the dining room.

PORT SWETTENHAM—Largest rubber port of the Malay Peninsula.

PENANG—The Snake Temple, Chinese Temple, Cornwallis Fort and lovely botanical gardens.

BELAWAN—Across the Straits of Malacca on the coast of Sumatra, 16 miles from Medan. In this area are some of the world's largest rubber plantations.

COLOMBO—In Ceylon, a romantic tropical isle of salubrious climate and rare and gorgeous colors. Rare gems, waterfalls, cataracts and surf beaches.

COCHIN and BOMBAY, in India, and KARACHI in Pakistan. Now around the tip of India and up the coast to these cities in the order named. India has been described as a world in itself. Places of worship dedicated to hundreds of gods, thousands of saints and prophets. Mosques, temples, sanctuaries, shrines and cathedrals—such architectural marvels as the Taj Mahal at Agra, and the Kutab Minar at Delhi.

SUEZ—Eastern entrance to Egypt. PORT SAID and then ALEXANDRIA. Mameluke Tombs, the Pyramids, the Sphinx and the Museum of Antiques from the Tomb of Tut-ankh-Amen.

NAPLES—Across the azure waters of the incomparable Mediterranean is the Bay of Naples, famed in song and story. Behind Naples, city of beauty, is the still live crater of Vesuvius, which passengers may visit.

MARSEILLES, France. Entry port to the Riviera, and Paris.

GENOA—Italy's chief seaport with a history dating back to earliest times.

LEGHORN—A seaport located north of Rome. From Leghorn the "paradise at sea" sails for New York.

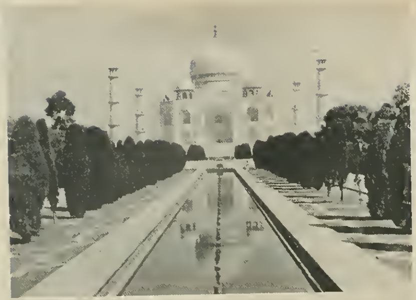
NEW YORK—America's greatest city is a travel treat in itself.

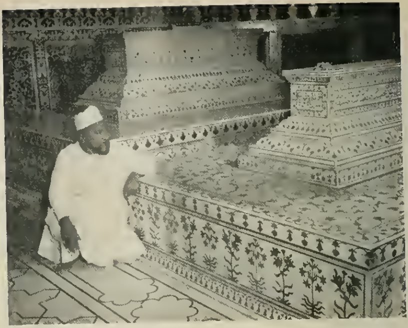
HAVANA—Situated on the Bay of Havana and the Gulf of Mexico. The city is gay and colorful.

CRISTOBAL—A modern city which owes its growth to the traffic of the Panama Canal. Then comes the passage through the Canal, where a continent is crossed in a matter of hours.

BALBOA—Located at the Pacific end of the Canal. Its Spanish architecture and massive churches are of

Top, the clubroom on the promenade deck and, below, the balcony over the clubroom.





Famed Scenes
World

Did you ever wonder what was inside the Taj Mahal? (Top, left). The tombs shown here (top, right) are an indication.

Other scenes on this page are the Colosseum at Rome, the Shwe Dagon Pagoda at Rangoon, the Sphinx near Cairo, and the Leaning Tower of Pisa in Italy.

On The Route

Did you ever hear of Tiger Balm? The villa (top, right) of its owner, Haw Par, is one of the sights of Hongkong. Top, left, is Hongkong Harbor and Kowloon.

Other scenes on this page include Colombo Harbor and Customhouse, Bombay from Malabar Hill, a Balinese rice field, and (below) one of the world's most intricately designed Hindu temples.

never-ending interest. Amusements range from bull fights to grand opera.

ACAPULCO—A Mexican port "where the mountains meet the sea."

LOS ANGELES—Southern California wonder city, renowned for its growth, its climate and its tourist lure.

Some Structural Features Of the Round-the-World Liners

Wall Coatings

To an exceptional degree, the living spaces of these vessels combine the essentials of safety, comfort and attractiveness. Not only are the ships compartmented for water tightness but also they are divided into fire-zones bounded by heavily insulated steel bulkheads, with the walls and ceilings of all the rooms and spaces composed of Johns-Manville asbestos paneling. The entire construction meets the rigid safety requirements of the U. S. Coast Guard for passenger vessels.

Comfort is aided by the restful decorative theme obtainable with such paneling and by the sound privacy between rooms that it affords. In addition, many of the public spaces are fitted with an acoustical ceiling which substantially reduces distracting noises and admits of easier and more audible conversation. Incombustible insulation on the ship's sides or under the decks provides equable room temperatures with the air conditioning operations.

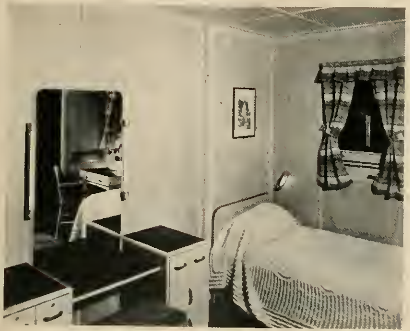
Attractiveness is obtained by utilizing a diversity of decorative paint treatments and lustrous thin wood veneers—laminated to the solid Marinite panels. A high degree of decorative treatment is thus secured without impairing the required fireproofness.

All of the walls of rooms and public spaces are J-M Marinite, furnished in panels up to 4 ft. x 10 ft., ⅞" thick. The material weighs about 3 lbs. per square foot, and affords a positive fire barrier far in excess of the time required by U. S. Coast Guard regulations. It possesses good resistance (about 30 decibels) to noise transmission, more than ample strength, and can be decoratively painted or furnished with thin facings of metal or wood. It has all the advantages of a solid wood panel without the disadvantages, as Marinite is immune to rot, mold or vermin-harborage.

The bulkheading and lining panels of Marinite are erected by securement to steel posts at the panel edges, with the upper and lower panel edges fitting into steel channels forming solid, free-standing partitions. Wardrobe doors are also of Marinite, faced to correspond with the adjoining bulkheads.

For the cabin class, the Marinite for the walls was supplied with the very hard asbestos cement finish—termed "Marine Veneer." Throughout all the corridors where

Installing Marinite covered panels in one of the public rooms of a big ship. Marinite is lightweight, fireproof, corrosion-resistant, easy to cut and fit, easy to finish, and has a variety of finishes. It is strong, mold-resistant, has a smooth, flat surface, a luxury appearance and long life, and is easy to repair.



Showing Marinite finish on walls and ceiling.

abnormal abuse from luggage-handling might be expected at times, the paneling also has Marine Veneer finish. This surfacing can readily be painted or, as is often done, merely waxed—saving the maintenance cost and nuisance of re-painting.

In the first class rooms, officers' quarters and public spaces, the Marinite as furnished by Johns-Manville has a surfacing of fine wood veneer. The veneer, while "cross-banded" (2 layers) for surface abuse, is not thick enough to noticeably affect the fireproof quality of the composite panel—as proved by severe tests at the National Bureau of Standards.

Ceilings are generally of ½" thick Marinite panels, secured to light steel furring which, in turn, is suspended by steel straps welded to the deckhead.

In all public rooms and some suites the small, visible perforations in the Marine Veneer facing allow the noise to pass through and be absorbed by the Aircoustic pad behind. The Units, $1\frac{3}{16}''$ thick, also meet all official incombustibility tests and afford fire safety to the deck above. For years this type of acoustical treatment has been a standard on American ships.

In addition, noisy machinery compartments, such as fan-rooms, radio-rooms, etc., are sound-proofed with J-M BX-4M Insulating Blankets—to isolate the noise from adjacent compartments.

Apart from requiring that all partitions and ceilings be of incombustible material, the U. S. Coast Guard demands that a passenger ship be divided into fire-zones with each zone bounded by a heavily insulated steel bulkhead, fitted with automatic fire doors.

For fire protection of the steel bulkheads, J-M BX-4M insulation of 6 lb. per cu. ft. density was selected. It is not only completely incombustible but also highly resistant to moisture. The same BX-4M in a lower (4 lb. per cu. ft.) density was decided on for insulating the shell of the ship, machinery spaces and the underside of decks, using 2" thick blankets of this material for comfort insulation.

These insulations, developed especially for marine service, are made of a water-proofed, blended mineral wool. They meet U. S. Maritime Specifications 32-MC-1 and 32-MC-2 and are on the approved list of the U. S. Coast Guard for Fire Protection Insulation of A-60, A-30 or A-15 bulkheads and decks. They combine, with exceptional insulating efficiency, the characteristics of light weight, non-combustibility and immunity to moisture and mold. They afford the most practical means to insulate adequately, without excessive weight, both passenger and cargo craft. The facility of handling the insulations makes for low installation cost.

In connection with insulation, the owners and the naval architect departed from tradition in selecting the material for lining the refrigerated cargo spaces and the refrigerated stores. Instead of the usual two layers of T & G lumber—susceptible to moisture and rotting, J-M Reeferite is used on these ships.

Reeferite is a laminated combination of the asbestos-cement sheet Marine Veneer with metal sheets—steel or aluminum. For these ships, the refrigerated space linings consist of a core of $\frac{3}{16}''$ Marine Veneer laminated under very heavy pressure to .032 inches aluminum on both sides—offering an aluminum-marine veneer sandwich panel.

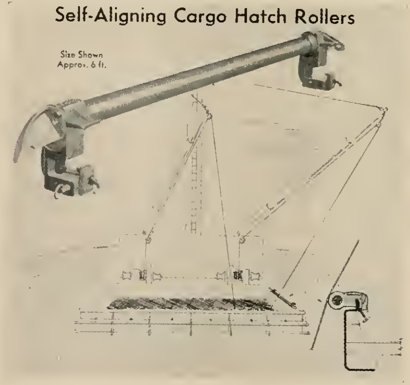
This type panel has a greater resistance to impact than 16 gauge steel, is relatively light and readily cut as erected and, of course, completely immune to rot or vermin-harborage. Moreover, the aluminum facing affords a sanitary, easily cleanable and an attractive exposed surface.

Air Conditioning and Refrigeration

The *President Jackson* will have one of the most complete air conditioning and refrigeration systems ever installed on a passenger vessel. The air conditioning of all passenger and crew quarters and public rooms, as well as complete refrigeration for ships stores and cargo compartments, the latter suitable for 10 degrees

These rollers have a multiple purpose. Mounted on the edge of the hatchway, they protect the hatch combing from sling loads, protect the rope from chafing and contribute to a more flexible handling of cargo.

Self-Aligning Cargo Hatch Rollers



below zero, will be done by two Carrier Centrifugal Refrigeration Machines.

The centrifugal units will handle both high and low temperature requirements simultaneously. They will supply Freon-12 refrigerant to fan-coil evaporators in ten cargo compartments totaling 76,000 cubic feet. Temperarures may be maintained in any of the compartments within the range of minus 10° to plus 50° Fahrenheit. At the same time, the Carrier units will supply Freon-12 to the ship's refrigeration systems, chilled brine to the galley boxes, and chilled water to the various air conditioning central stations serving public rooms, staterooms, and crew's quarters.

Centralization of refrigeration has resulted in remarkable savings in space and also provided major operational advantages. This advanced technique developed by Carrier's Marine Department engineers, is being used for the first time aboard the APL liners.

In addition to the self-aligning cargo hatch rollers illustrated herein, the Alvin R. Campbell Company of San Francisco furnished the metal cargo blocks, swiveling Campbell design cargo hooks, and hand-operated vang winches.

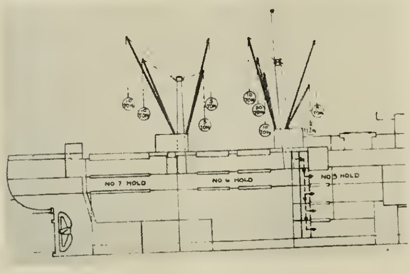
Water is needed at sea and that means evaporators. Davis Engineering Corporation's Paracoil marine products on the APL ships include evaporators, coolers and fresh water storage heaters.

Away from shore the Radiomarine radio telegraph equipment, and long range radio telephones keep the distance shortened. Radiomarine also furnished the direction finder, while RCA supplied the sound motion picture equipment.

There are many hundreds of manufacturers who produce the parts for a big ship. In this case the builders have been canvassing the market for three years, and their selections, as far as they have been made to date, indicate some fine choices. Many of the products are so obvious as to need little mention. For instance, the steel for the hull which was furnished by Bethlehem, Carnegie Illinois Steel Company, Jones & Laughlin, and Wheeling. At the other extreme of obviousness might be mentioned the spare propeller shafts, also made by Bethlehem and now stored in Bethelem's San Francisco Yard. In between these extremes there are the propellers made by Baldwin Locomotive Works; capstans, topping winches and ladder winches by M. L. Bayard & Company; piping by A. M. Byers Company; cargo dehumidification equipment by Cargocaire Engineering Corporation; power-operated watertight doors by Walz & Krenzer, Inc.; steam reducing and pressure regulating valves, and the whistle, by the Leslie Company. The radar set was furnished by Mackay Radio & Telegraph Company; tubing and pipe by National Tube Company; passenger and service elevators by Otis; copper wire and cable by John A. Roebling's Sons Company; oil coolers, feedwater heaters and Butterworth heaters by Ross Heater and Manufacturing Company; oil purifiers by Sharples Corporation; manila rope by the Wall Rope Works; ventilation fans by L. J. Wing Manufacturing Company. The lifeboats, davits, winches and floats are Welin. The depth sounding system is Submarine Signal and the gyrocompass system is Sperry.

Overboard discharge valves are a small item in these ships, but the selection of Hooper valves represents a significant advance in recognizing the importance of such fittings. These fittings are important, and in the past have been the source of a lot of trouble. The Hooper vertically installed ball float type valves assures the elimination of back washes and overflows from scupper drains and sanitary lines.

There are many items of hull, deck, and interior



Showing the cargo booms with the capacity of each. The Alvin Campbell Co. furnished the blocks for all booms on the new APL ships.

Spare Propeller Shafts For APL Ships

Shown in the Machine Shop at Bethlehem Pacific's San Francisco Yard are three spare tailshafts, one for each of the three new round-the-world passenger liners now being built in the East for American President Lines. Each shaft is 26′ 6″ long and weighs 47,000 lbs. Liners for the shafts, which can be seen in the background, are each 18′ 8″ long and weigh 7,000 lbs. All of the three shafts were forged and machined by the yard.

equipment which deserve mention: Seaboard Machinery Company's "Mege" quick opening hinged hatch covers; Cargocaire hold conditioning; main and other air compressors and reciprocating and centrifugal pumps by Worthington; Sharples lubricating oil purifier and heater; C. H. Wheeler's electro-hydraulic steering gear with telemotor, anchor windlass, and main and auxiliary ejectors; Lake Shore cargo winches; and Crane Company's manifolds for fuel oil transfer, heating coils and drainage systems. Bottom paint will be a different make on each of the three vessels so that a fair comparison can be made. The mechanical engine order telegraph system, electric rudder angle system, shaft revolution indicating system, sound powered telephone system, running light tell-tale panels, general alarm bell system, and electric whistle control system are the products of the Henschel Corporation of Amesbury, Mass.

General Electric Propulsion Machinery

This vessel is designed to be driven by a single screw and has a "contra-guide" form rudder post to transform some of the angular velocity of the water in the propeller stream into forward-motion energy for the hull. The propeller shaft is turned through double reduction gearing by a cross compound steam turbine designed to deliver 12,500 shp at 92 rpm of the propeller shaft when fed with steam of 600 psi gage and 840° F. total temperature at the throttle. The design will be such that the turbine will operate continuously when delivering 13,750 shp at about 95 rpm of the propeller shaft.

Hundreds of Motors

Of the several motors to be used on each of the three new American President Lines' Round-the-World luxury liners, more than half, representing about 95 per cent of the total electric horsepower on board, will be built by General Electric.

Motors to be supplied by General Electric will power the majority of electrical equipment aboard the palatial round-the-world cruisers. Ventilating fans, air conditioning equipment, deck and underdeck machinery auxiliary equipment, even the lathe, drill press and milling machine in the workshops will be powered by them. Uses will run from bilge pumping to vacuum cleaning. Electricity for the motors will be supplied by three 600-kw d-c turbine-generator sets also built by General Electric, on each ship.

The ship will use nearly a thousand motors of all types when fully equipped.

Babcock & Wilcox Boilers

To provide steam for the turbine and for other uses, two steam boilers will be installed in the engine room. These will be of the Babcock & Wilcox single pass header type with water cooled furnaces, superheaters, and Ljungstrom air heaters. Each boiler will be fired by four B & W Iowa type wide range Y-jet steam atomizing oil burners. These are the first American ships to be equipped with Ljungstrom air pre-heaters. Forced draft fans are Westinghouse. The air preheater will be installed in the uptake of each boiler. Each of these boilers will have approximately 8100 square feet of water heating surface and at normal rating will generate 53,500 lbs. of steam per hour at 625 psi and 850° F. total temperature with feed water at 375° F. Each boiler will be capable of sustained operation while generating 80,000 lbs. of steam at these same pressure and temperature conditions. At its normal rating the standard efficiency of each boiler will be at least 88 per cent.

Many people wonder how it can be that a great hull weighing thousands of tons can be launched with perfect assurance that it will float. Before the keels were laid for these ships, models were built and tests conducted, to the satisfaction of all concerned, at the David W. Taylor Model Basin.

Insurance

Marine Insurance for such a fleet as that of the American President Lines, Ltd. is an important factor in its operation. Bayly, Martin & Fay, Inc., insurance brokers and average adjusters for this great American fleet have arranged round-the-world insurance coverages for the S. S. *President Jackson.* The firm maintains complete claim adjusting facilities and brokerage contacts in the insurance markets of the world, thus giving the maximum in insurance service and protection.

APL Commodore

Left to right: J. M. Diggs, Vice President in charge of Passenger Dept.; M. J. Buckley, Senior Vice President; Capt. H. J. Ehman; E. D. Flaherty, Vice President Operations; Capt. F. W. Wauchope, USN; W. K. Varcoe, Vice President Freight Traffic, American President Lines. They are shown aboard the SS "President Cleveland" where Capt. Ehman was elevated to the rank of Commodore and his ship to flagship of the President Lines' global fleet. The ceremony was held at San Francisco December 16, 1949.

Largest Tanker Launched at New York Ship

— First of 32,000-ton Group

THE *Atlantic Seaman*, the world's largest tanker, was launched on June 14th, at the Yard of the New York Shipbuilding Corporation, Camden, New Jersey.

The first of three sister ships being built for Philadelphia Tankers, Inc., the *Atlantic Seaman* is the result of the joint work of the designing staffs of The Atlantic Refining Company and the New York Shipbuilding Corporation. When completed, the vessel and its outfit will represent the most modern practice for bulk oil vessels.

The ships have an overall length of 659 feet 6 in., a beam of 85 feet, and a draft (summer) of 34 feet 2-5/8 in. At this draft, the displacement will be 39,500 tons. The capacity of the cargo tanks will be 257,900 barrels, and the bunker tanks will hold 21,000 barrels. Planned to be 32,000 tons deadweight, this ship compares with the war-built T-2 as follows:

	Length	Beam	Draft	H.P.	D.W.
T-2	523′6″	68′	29′11⅜″	6,000	16,765
Atlantic Seaman	659′6″	85′	34′ 2⅝″	18,000	32,000

Spacious deck houses enclose stateroom type accommodations for a crew of about fifty officers and men. Lounges, dispensary, and excellent sanitary arrangements are provided for the recreation and health of the crew during the voyage.

Bow view of "Atlantic Seaman" leaving the ways.

The latest navigational aids are provided, including gyro compass, gyro pilot (metal mike), radar, fathometer and loran.

The vessel is single screw, driven by a Westinghouse steam turbine of the cross compounded double reduction gear type designed to develop 18,000 shaft horsepower, maximum, at 103 revolutions per minute. The propeller is 4 bladed, 22 feet in diameter,built-up type with manganese bronze blades and cast iron hub. The propeller weighs approximately 71,500 lbs. and the propeller shaft diameter is 24¼ inches.

At the launching of ths SS "Atlantic Seaman" June 14. Left to right: H. G. Schad, president, Philadelphia Tankers, Inc.; R. H. Colley, president, Atlantic Refining Company; Mrs. Hilberg R. Hansen, sponsor; T. H. Bossert, president, New York Shipbuilding Corporation.

Steam is supplied to the high pressure turbine from two Combustion Engineering oil fired marine type boilers which operate at 650 lbs. per sq. in. pressure and 1020°F temperature. Bailey automatic boiler room equipment is used for control of steam pressure and temperature and to insure proper and efficient combustion at the oil burners.

The steam cycle is designed for maximum fuel economy and embodies many new engineering developments. Steam is extracted from the turbines at four bleed points and four feedwater heaters are installed to heat the feed water to approximately 418°F at the inlet to the boiler.

Electric current for lighting, auxiliary power and the numerous electrical services is generated by turbine generators at 440 volt, 3 phase, 60 cycle. These auxiliary turbines are operated from the high pressure, high temperature steam system.

Cargo pumping equipment of the motor-driven cen-

Profile view of "Atlantic Seaman" just launched.

trifugal type will discharge a full cargo of oil in approximately 12 hours.

When delivered, about September 1, the *Atlantic Seaman* will be chartered and operated by The Atlantic Refining Company of Philadelphia.

The ship was christened by Mrs. Hilberg R. Hansen, whose husband is Boatswain on the Atlantic Refining Company's tanker *Robert C. Tuttle.*

Organization of New Maritime Agencies

NOTE: An analysis of the Maritime Reorganization Plan by the Association of American Shipowners was published in the June Pacific Marine Review. As detailed announcements are issued by the Maritime Administrator, they will appear here.

THE organization of the two new Federal Maritime agencies within the United States Department of Commerce calls for three operating offices, the chiefs of which will report directly to the Maritime Administrator or his deputy. These three major units will be known as the Office of Subsidy and Government Aids, the Office of Maritime Operations, and the Office of the Comptroller.

All duties requiring accurate evaluation of foreign ship-building and operating costs used in determining subsidy differentials have been concentrated in the one Office of Subsidy and Government Aids. Under this office will function the Divisions of Operation Cost Comparison, Construction Cost Comparison, Contract Evaluation and Administration, and Shipping Data.

The Office of Maritime Operations will be responsible for the work of five divisions—Ship Construction and Repair, Vessel Custody (including Maintenance of the National Defense Reserve Fleet), Maritime Training, General Services, and the Vessel Trial and Guarantee Survey Boards.

All fiscal activities are grouped under the Office of the Comptroller, with four divisions—Audits, Accounts, Credits and Collections, and Insurance. John R. Paull, formerly Chief, Bureau of Finance, under the Maritime Commission, was assigned as Comptroller.

Chiefs of the Offices of Subsidy and Government Aids and the Office of Maritime Operations have not been designated.

By concentrating the operating functions of the Maritime Administration in three offices, full responsibility will be vested in three men who report directly to the Administrator. They will have commensurate authority to carry out their duties. The Administrator will thereby be relieved of many decisions at the working level. This new line of authority should move the business of the agency at a faster rate and with a greater degree of efficiency.

Two staff groups have been created. Those serving primarily the Federal Maritime Board are the Secretary's Office, Regulation Office, and the Trial Examiner's Office. Those serving both the Administrator and the Board are: Office of the General Counsel, Program Planning Office, Budget Office, and Personnel Office. A Division of Claims will report directly to the Administrator until such time as the large backlog of claims has been reduced.

Personnel assignments to head the staff functions of the Maritime Board are: A. J. Williams, Secretary, Ralph H. Hallett, Chief of Regulation Office, Gus O. Basham, Chief Examiner. Personnel assignments to head the staff functions of the Maritime Administration are: Francis S. Walker, General Counsel, H. M. Hochfeld, Budget Officer and Clyde L. Miller, Personnel Officer. The Chief of the Program Planning Office has not yet been named. Lemuel Smith will head the Division of Claims. The Division of Maritime Labor Relations, previously maintained under the Maritime Commission, has been abolished, and its functions transferred to the Office of the Administrator.

The Tug "Magnolia"

--- Another Diesel-Electric Installation

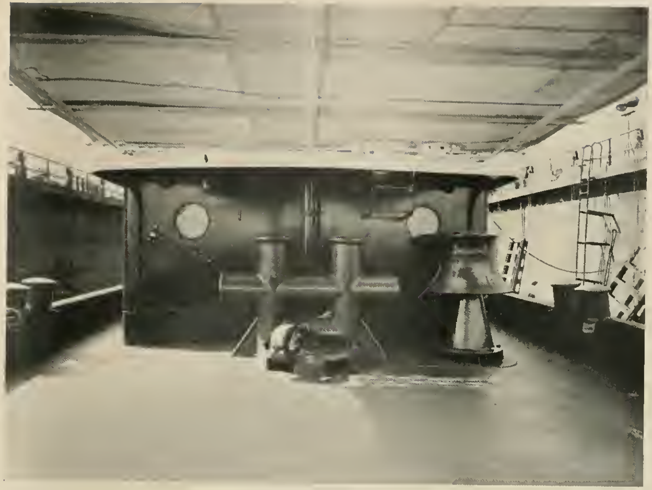
LATEST addition to the fleet of the Magnolia Petroleum Company of Beaumont, Texas, is the new diesel-electric tug *Magnolia,* built for canal, harbor, and coastwise service, with headquarters in Beaumont. Built by Levingston Shipbuilding Company, Orange, Texas, the vessel is 100 feet long, 26 feet in breadth and has a depth of 12.5 feet. She is of all-steel construction.

Power for main propulsion is supplied by a 12-cylinder, 2-cycle General Motors Model 12-278A diesel engine, rated 1200 hp. at 750 r.p.m., and direct-connected to an 814-kw., 560-volt, d.c. generator, which supplies current to a 1020-hp., 560-volt, d.c., 700 - 875 r.p.m. propulsion motor. The motor is directly connected to the high-speed pinion shaft of a reduction gear. The propeller shafting is connected to the reduction gear by a special coupling manufactured by Levingston Shipbuilding Company and approved by the American Bureau of Shipping, and the motor, reduction gear and shafting are capable of delivering over 1000 s.hp. at 160-200 r.p.m. to the three-blade, 8′10″-diameter by 7′-pitch screw propeller.

The propulsion generator is constructed with an exciter rated at 24 kw., 120 volts, d.c., 375-750 r.p.m. The idle exciter, when not in use for providing excitation to the propulsion generators and propulsion motor, is available for supplying power to the distribution board for general ship's service. This 24-kw. power which is available when the vessel is underway is ample to provide for the normal use of electricity for the steering gear, ventilation system, refrigeration, heating and lighting. On long trips, this amounts to a considerable saving in the use of machinery.

The motor speed and, correspondingly the propeller and ship's speed, can be controlled from any one of three stations—the pilot house, the engine room or the afterdeck conning station. When under heavy tow, the motors can be operated at reduced speed, but at full voltage, full power and full engine speed, by increasing the field current to a value which will allow maximum armature current without overload. The motor fields are protected

New Diesel-Electric tug "Magnolia."



Aft of deck house, showing towing bits; towing hook in immediate foreground; and to the right on the starboard side, the gypsy.

against overheating at stalling condition by a field reducing contactor. A current-limiting device, which regulates the generator field current, is provided to limit the current in the propulsion loop to 125% of full load value, and to protect the electrical machines against momentary excessive current caused by rapid acceleration and reversing.

The diesel-electric propulsion system gives the pilot finger-tip control at any speed ahead or astern and allows for the full development of power when running light or with heavy tow. Under heavy tow, full power is developed at slower propeller speeds, eliminating slip.

The electro-hydraulic steering gear employs as a prime mover a 10-hp. non-reversing electric motor, driving a variable-stroke reversible pump. The liquid handled by the pump actuates the single opposed rams. The pilot house equipment consists of a polished brass column, on which is mounted the rudder indicator and a 48″-diameter polished brass steering wheel. The starting and stopping push buttons to control the steering-gear motor are installed in the pilot house, which allows full control of the steering gear from the pilot house, independent of the engine room. A pilot light is installed in the pilot house to show the wheelman that the steering gear is running. The vessel can be steered from either one of two stations—the steering station in the pilot house, or the conning station on the after boat deck.

The principal items of auxiliary machinery are two diesel-driven 30-kw. electric generators, a fire pump, bilge pump, lube oil stand by pump, fuel oil transfer pump, air compressor, and a motor generator set.

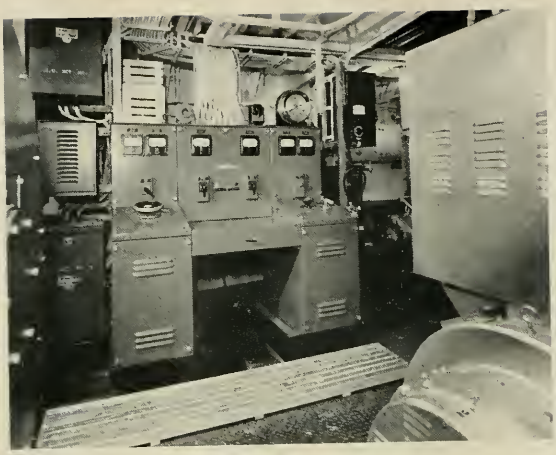
The two 30-kw. auxiliary diesel-driven generator sets are duplicates, each being driven by a 45-hp. General Motors Model 3-71 diesel engine, direct-connected to a 30-kw. compound-wound 120-125-volt generator. One is installed on the port side and the other on the starboard side of the engine room. The units are self-starting and equipped with battery chargers for recharging their own batteries.

The fire pump has a capacity of 360 gallons per minute at 125 pounds pressure. It is direct-connected to a 30-hp. electric motor. For fighting fires, there is an outlet on each side of the vessel's house, and there is a fire monitor installed atop the captain's cabin.

The bilge pump, lube oil standby pump, and fuel oil transfer pump are all positive displacement pumps. The three pumps are exact duplicates, thereby eliminating the necessity for carrying large quantities of spares. The bilge pump is driven by a 7½-hp. motor; the lube oil standby pump by a 5-hp. motor; and the fuel oil transfer pump by a 3-hp. motor. The air compressor, driven by a 3-hp. electric motor, is equipped with automatic controls and air is stored in a 20″ x 72″ air receiver. Compressed air is used for blowing the vessel's whistle and for cleaning in the engine room.

A motor generator set is installed so that the vessel can be laid up in its own home port where electricity from the dock is available. By plugging in the motor generator set from the shore connection to power on shore, the vessel's lights, fan, refrigeration and heating can be operated without running the diesel-driven generators installed on the vessel. The motor generator set is equipped with a 7½-hp. motor driving a 5-kw. generator.

The engine room, all quarters and the galley on the main deck have forced ventilation. Two large blowers blow air into the after end of the engine room and under the engine room floor plates. Exhaust is up through the vessel's stack. Air is blown into the galley and into the quarters through metal ducts, allowing for a complete change of air in



Engine control station in engine room.

less than two minutes.

In addition to forced ventilation, each room is equipped with an oscillating electric fan. A larger oscillating electric fan is installed in the galley.

For heating the vessel, a boiler is installed in the engine room. The boiler is complete with fuel pump, blowers, motors, transformers, low-water cutoff and pressure switch, to make the boiler operation entirely automatic. Convector-type radiators are installed in each room and a large radiator is installed in the stowage space, which is forward below the main deck.

The lower, or deck, house is constructed of welded steel. All outside doors dog watertight on rubber gaskets. Each inside door has a louver in the bottom half to assist the ventilating system.

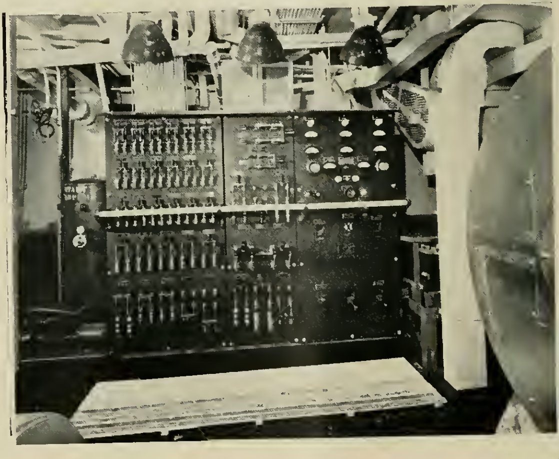
There are two rooms forward, each equipped for two men. The galley is next aft. Next after the galley is the upper engine room. On the starboard side of the upper engine room there is a toilet room forward and a toilet room aft. On the port side of the engine room aft is the mate's room. At the extreme aft end of the house are the chief engineer's room and a second room equipped for two men.

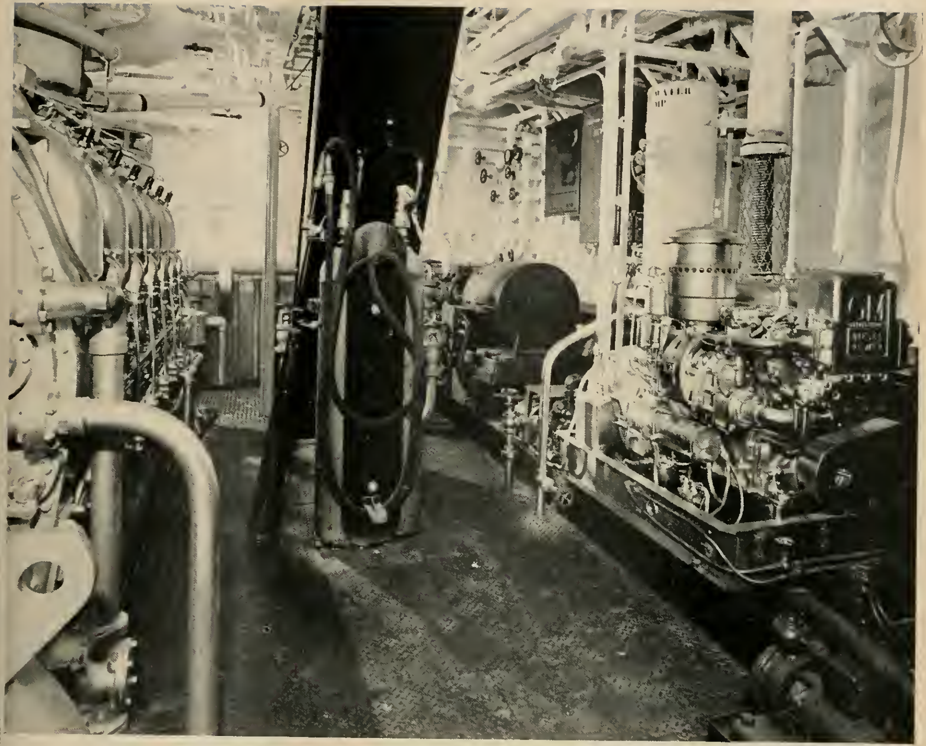
The galley extends entirely across the house. It is equipped with large stainless steel sinks and drainboards with storage space below. The range is equipped with a carburetor burner. Built into the galley is a large double-door refrigerator, complete with two stainless steel service doors. Seven persons can be seated at the mess table. A 20-cu. ft. stainless steel frozen food locker with a lift top is part of the galley equipment, but is installed in the storage space below the main deck forward. There are also installed in the same space, a linen locker built of wood and a galley-stores locker built of steel.

There is a raised pilot house forward on boat deck with captain's quarters immediately aft. The pilot house is fitted with seven windows, a door on either side opening upon a small bridge leading to the edge of the vessel, and another door leading to the captain's quarters. In bad weather the partable glass in the pilot house windows can be opened a few inches just in line with the pilot's vision by raising the top section of the glass and lowering the bottom section. In the pilot house are installed a magnetic compass in its binnacle, the engine controls, steering stand and steering wheel, ship-to-shore telephone, engineer. p. m. indicators, tell-tale panel, motor control and tell-tale light for the steering gear motor, barometer, clock, whistle pulls, speaking tube, bell and jingle pulls, and resound from the engine room gong. In the after end are two fixed plate-glass windows which enable the pilot to look aft. The vessel's stack is sharply ellipical so the pilot's view will not be obstructed.

The captain's cabin, just aft of the pilot house, is equipped with a mahogany berth with drawers beneath, a large built-in mahogany

Engine room view, showing distribution panel for ship's service.





Looking forward from engine room, showing on the left the main propulsion engine, and in the right foreground the auxiliery generating set; on the right the scavenging pump and in the direct center two CO_2 bottles for fire fighting.

clothes locker, a desk and an upholstered settee. The doors in the captain's quarters are of teak. Alarm bells are fitted in all quarters.

CO_2 fire-fighting equipment installed on the vessel includes two 50-lb. cylinders installed in the engine room with 25 feet of hose and discharge nozzle. Throughout the vessel there are installed five 15-lb. CO_2 portable hand extinguishers on marine brackets.

The vessel is equipped with a 16-ft. lifeboat. In the lifeboat are all the supplies required for coastwise service. The vessel has life preservers installed in racks in each of the rooms, and it is equipped with four 30″ U. S. Coast Guard approved ring buoys and two electric water lights.

The *Magnolia's* keel was laid on October 5, 1949; she was launched on January 18, 1950. The trial trip was run on March 22, 1950. The "Flying Red Horse" mounted on the enameled insignia gallops forward on both sides of the elliptical stack.

The Oyster and The Eagle

When God made the oyster, He guaranteed him *ABSOLUTE ECONOMIC AND SOCIAL SECURITY.* He built the oyster a home, a shell, to protect him from his enemies. When hungry, the oyster simply opens up his shell and the food rushes in. But he is limited to a few feet of ocean bed.

When God made the eagle, He said, "The blue sky is the limit. Go build your own house," and the eagle went out and built his house on the highest mountain crag, where storms threaten him every day. For food he flies through miles of rain and snow and wind.

The eagle, and not the oyster, is the emblem of America.—*Anonymous.*

Quick Work

— Bethlehem Repairs Hull in Seven Days

Her collision-damaged hull completely repaired in only seven working days, the S. S. *Edgar F. Luckenbach,* C-2 freighter, which suffered severe hull damage in a collision May 29 with the liberty ship *Arkansan* in San Francisco Bay, left the San Francisco Yard of Bethlehem Pacific Coast Steel Corporation, Shipbuilding Division, seven calendar days ahead of job contract completion time.

Because of this unusually speedy repair job performed by the yard, the *Luckenbach's* owners were saved considerable expense by having repairs to this fully loaded vessel completed so far ahead of time.

Shortly after the collision, yard engineers erected a collision mat over the 30-foot-long gash abreast of No. 1 Hatch on the vessel's starboard side, thus permitting her owners to remove cargo at the dock before repairs to the hull were started.

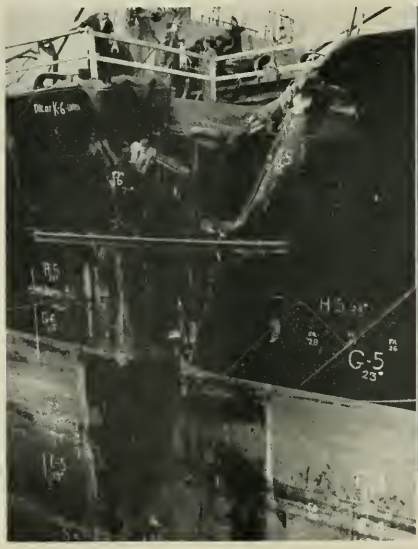
Podesta Divers performed the underwater hull work in connection with the placing of the collision mat.

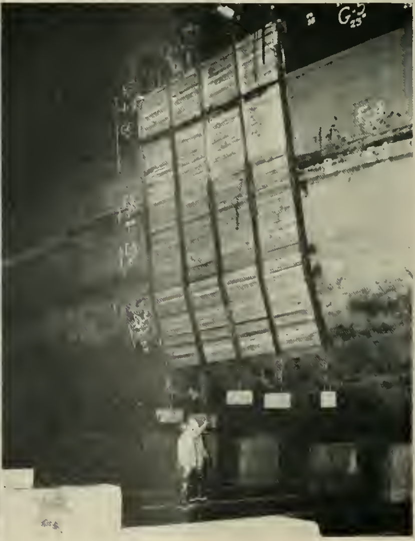
On the night of June 12, the ship was placed on one of the yard's drydocks. By June 14, collision mat and all

Her damaged bow section completely repaired, the Luckenbach freighter SS "Edgar F. Luckenbach" is shown above at Bethlehem Pacific's San Francisco Yard just before leaving for service.

Shown below is the huge gash in the starboard bow of the SS "Edgar F. Luckenbach" following removal of the collision mat, shown in picture at right. The gash measures approximately 18 feet across at the deck line and extends downward about 30 feet.

Shortly after her collision with the freighter "Arkansan", engineers from Bethlehem Pacific's San Francisco Yard, with the aid of divers, erected a wooden collision mat (shown below) over gash in the "Luckenbach's" bow. This mat, which permitted removal of cargo in way of the damaged section, was removed after the ship was drydocked.





damaged hull members had been removed. By June 19, all framing and shell plating were in place and the hull tested. The remainder of the necessary work in connection with the job was completed on June 21, and the ship left the yard and returned to service at daybreak on June 22.

Giant Barge Launched

Second Big One Built by Pacific Coast Engineering Co.

BARGE 14, a gasoline tanker, built by the Pacific Coast Engineering Company for the Bay Cities Transportation Company, was launched at the yard of the builder in Alameda June 19. This vessel is a sister ship to *Barge 12,* built and delivered to the same owner a year ago by Paceco. Its principal dimensions are 230 ft. in length by 46 ft. beam by 16 ft. depth, with a capacity of 26,000 bbl. of oil products. The vessel is certificated by the United States Coast Guard to carry Grade B and lower petroleum products in bulk. Like her sister ship, she is reported to be the largest non-propelled bulk oil carrier in the United States.

The vessel is fitted with three diesel engine-driven cargo pumps, and is fully equipped for service as an unmanned barge for both coastwise and harbor service.

The hull is divided into 18 tanks by means of two longitudinal bulkheads extending the full length of the vessel, and seven transverse bulkheads extending the full breadth of the vessel. The engine room is isolated from the cargo tanks by two longitudinal cofferdams which serve as the fuel storage tanks for the pump diesel engines. Access to the engine room is provided through a large companionway hatch located on the after deck, while access to the pump room is provided by two 24" x 24" watertight hatches. The hull of the barge is longitudinally framed in excess of the classification requirements of the American Bureau of Shipping. All shell plating is $\frac{1}{16}$" thicker than required in order to increase

As Barge 14 became water-borne at the Alameda plant of the Pacific Coast Engineering Company.

the life of the vessel while in the oil carrying service. Engine driven exhaust ventilators are provided in both the pump room and the engine room while 10″ vents terminating in return bends provide ventilation for the forepeak. The cargo piping system of the vessel is so arranged that the center tanks are filled and discharged through one pumping unit which is isolated from the balance of the barge piping systems. In this manner the vessel can carry two grades of petroleum products with no fear of contamination.

The three cargo pumps are Kinney Heliquad Model #HQAC14731, each driven by a Grey Marine Diesel Engine 4½″ x 5″, 145 HP at 1800 rpm. The pumping units are connected through a 150 HP 3:1 reduction gear unit, designed and built by Pacific Coast Engineering Company. Two hand bilge pumps are provided, one for the forepeak and one for engine and pump rooms. The vessel is equipped with ground tackle, consisting of two 750 lb. Danforth anchors and one cable reel mounted on the deck forward. A 1,000 lb. capacity anchor davit is provided for handling the anchors.

In addition to the generators provided on each diesel engine, a 1 KW, 32 volt Kurz & Root generator is driven by the power takeoff of the center engine. In addition a 1 KW gasoline-driven generating set is provided for charging the lighting batteries. The entire electrical installation of the vessel is provided by Ets-Hokin & Galvan of San Francisco. Two heavy-duty Hyde capstans are installed on the main deck, one forward and one aft. Three 50 ft. lengths of 4″ rubber cargo hose manufactured by the Goodyear Rubber Company are carried in specially designed racks on the deck, and are attached to the pump discharge header.

All cargo valves of the vessel are the Merco-Nordstrom plug type. Two large towing pads are provided at the bow of the vessel, each furnished with a 2½″ shackle to which the towing bridle will be attached. The exhaust piping from the diesel engines passes through the stern of the vessel and 4″ valves are provided at the shell to maintain a watertight engine room while the barge is at sea.

Special service load lines for the San Francisco-San Diego route and coastwise load lines for San Diego to Seattle, in compliance with federal regulations, are being assigned by American Bureau of Shipping. San Francisco will be the home port.

This vessel is the 11th hull to be launched by the Pacific Coast Engineering Company during the postwar construction period, and is the 8th oil barge to be built for the Bay Cities Transportation Company.

This barge, and its sister ship *Barge 12*, will be used to service a new oil terminal being constructed by the owners at Crescent City, Calif. The terminal at Crescent City will act as a distribution point for oil products throughout Northern California.

The "Hortensia Bertin"

-- Big Wooden Tuna Clipper --

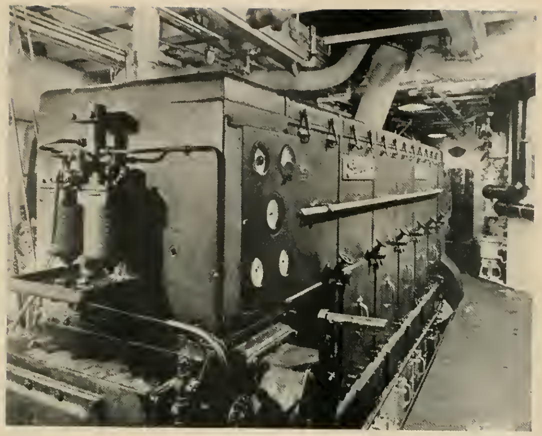
One of the most modern fishing vessels in her class is the new diesel clipper *Hortensia Bertin*, owned by Captain C. E. Bertin of Los Angeles. Although her home port is San Diego, the new clipper will spend more time at the Central American fishing grounds than other fishing vessels since she will transfer her catch at Panama to refrigerated ships of major steamship lines for transport to San Diego. She will be away for at least a year, far from mechanical attention other than that provided by her own crew, and has therefore been built for hard service. She is powered by a Superior Model 60 six-cylinder, 12-inch by 15-inch diesel, which develops 465 hp. at 450 rpm. The engine can be fully controlled from the pilot house.

Captain C. E. Bertin's newest clipper, the "Hortensia Bertin".

Built of heavy Douglas fir, the Hortensia Bertin is 103 feet long. Her beam measures 25 feet, 10 inches, and she has a 12-foot, 10-inch molded depth.

The vessel has thirteen fish holds, including three refrigerated holds on deck which serve as bait boxes on the outbound trip and four oil fuel tanks which are used for frozen

The "Hortensia Bertin's" main engine, a Superior six-cylinder diesel. ▶



fish on the trip back in. The entire space below, with the exception of the engine room and the chain locker, is used for fish, to a grand total of 186 tons.

Hortensia Bertin was built by Tacoma Boatbuilding ompany, Tacoma, and was designed by Wilvers and DeFever, naval architects of San Pedro. Arthur DeFever, of the latter firm, supervised construction as Captain Bertin's representative.

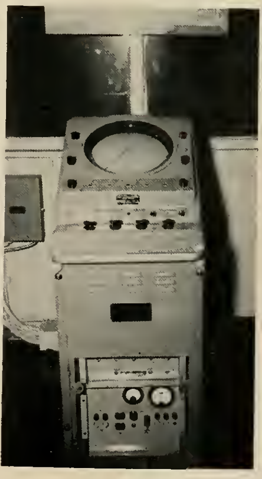
Captain Bertin owns another tuna clipper, *Yolande Bertin,* and five cargo vessels.

Seattle Radar Docking Pin-Pointed to 20 ft. Range

THE Seattle Port of Embarkation, using an application of aviation's GCA (Ground Control Approach) for guiding airplanes to a safe landing during periods of poor visibility, has successfully docked harbor vessels and transports from Elliot Bay with visibility conditions near zero.

The tests conducted at the port have proven that an experienced radar operator, even when operating under the most adverse conditions, can safely dock a ship with the radar control method. The first test was conducted June of last year. The Seattle Port of Embarkation tug LT-373, was selected for the experiment and the tug Master was briefed to follow all instructions received by radio-telephone from the radar tower. The windows of the radar "shack", perched on top of Pier 37, were blacked out completely with canvas so that the harbor was entirely hidden from the operator. The tug was picked up on the screen about two miles out and was instructed as to both speed and direction. Because the day was clear, a large number of vessels were operating in the bay necessitating frequent reidentification of the LT-373. The tug, following instructions, executed a sharp change of course and also followed a zig-zag route which made its identification quite easy on the screen. The radar operator brought the tug within 20 feet of the pier before he returned control to the Master.

Not long afterward the twin stack U. S. Army Transport *General E. D. Patrick* was "talked in" during a period when the harbor was fogbound. This was the first time the radar was used by the Port as a necessity and the first time a transport was involved. After the *Patrick* was



Radiomarine equipment used for Harbor Control Approach at Seattle Port of Embarkation.

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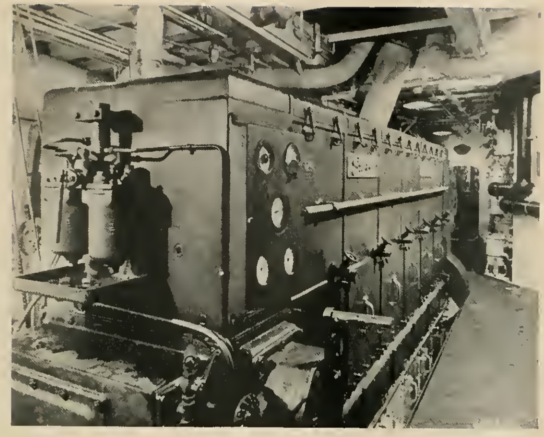

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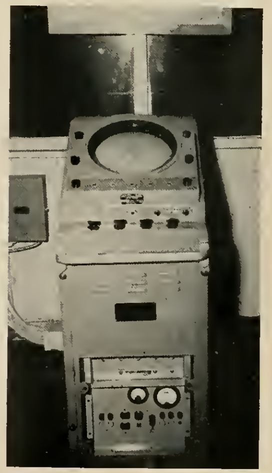


Radiomarine equipment used for Harbor Control Approach at Seattle Port of Embarkation.

identified on the screen by position and direction, the tracking was expeditious.

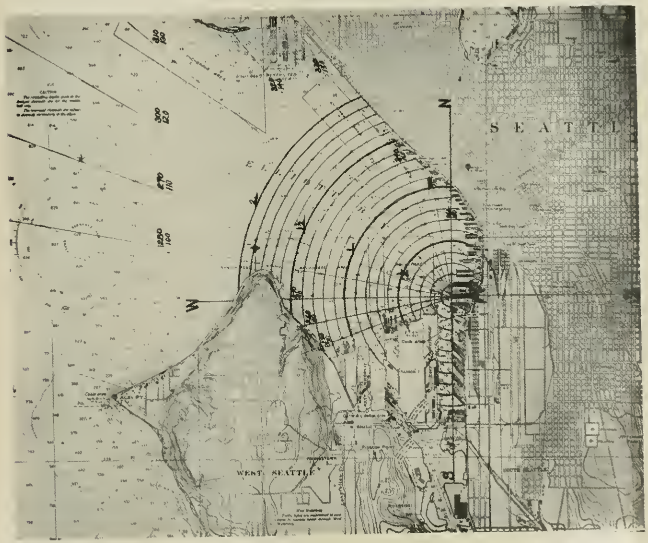
The radar control system at the Port was initiated by Delbert Green, a civilian employee assigned to the Signal Division after an investigation revealed that visibility distance on Elliot Bay was less than one-fourth mile approximately 30 days a year. (The Climatological Office of the U. S. Weather Bureau reports 32 days of 1949 provided less than one quarter mile visibility.)

Green, working with personnel of the Water Division, first selected the peak of the seaward end of the center pier at the port for the radar station, and then prepared a large scale chart of the harbor with lines of bearing marked clearly and radiating out from the radar tower as a focal point.

The lines were drawn to cover the entire area and concentric circles indicating distances from the pier were also marked on the chart to coincide with distances shown on the rings of the radar screen. The chart was placed in such a position that the radar operator could easily observe his screen and, without moving, could check positions on the chart.

The radar set, a standard Radiomarine CR-101-A, AN/SPN-5 made up of a Radar Sychoronizer SN 62/PN 5, Radar Receiver RT 161/SPN-5, AS 444/SPN-5 antenna, RCA transmitter, and associated circuits, has a range of 40 miles. It is one of 218 purchased by the Army, and is similar to the type being installed on hundreds of American and foreign vessels. The range switch enables the operator to lower the range from 40 to 20, 8, 4, or 1½ miles. With the minor ranges the pip sizes are increased proportionately allowing for greater safety when the guided vessel is in the more densely trafficed portion of the bay. During clear weather a Pelorus is used to check the accuracy of calibration on positions

Radar control tower located on the end of Pier 37, Seattle Port of Embarkation. Windows are covered to simulate fog conditions for the radar operator during tests.



Harbor Control Approach Navigational Chart with lines of bearing and range added.

of fixed and moving targets, as shown by the dial of the radar screen.

Ship to tower communications are received on a Hallicrafter SX 28 using a frequency of 2030 kilocycles. The transmitter used in communicating with the ships is in the port radio tower but is connected by remote control to the radar tower. It also operates on a frequency of 2030 kilocycles and the remote control hookup permits the radar operator to talk directly to the vessel he is guiding during operations.

The microphone is placed so that the operator is not required to exert any effort to control it; also his instructions to vessels are not required to be relayed through a second party. This permits the operator to make split second decisions and promotes accuracy by eliminating the chance of error in repetition of directions.

After meticulous study the radar operator soon became familiar with all fixed characteristics of the harbor such as buoys, piers, waterways, and islands appearing as pips on the screen. This study was necessary to enable the operator to differentiate between the permanent pips and those made by vessels at anchor. After the study of the harbor was complete, Green was ready for the first test.

Operating personnel of some ships believe the method to be fallible because of identification procedures. However, many means may be used to identify the vessel on the screen; it may be ordered to stop, change course or any of many maneuvers that would distinguish it from other vessels. Any directed movement observed on the screen may be used to assure the tower operator he is tracking the correct vessel.

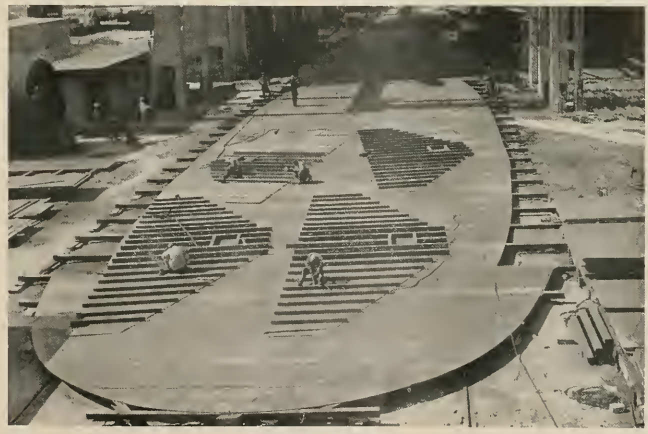
Ferryboats Built "Upside Down"

Todd's Galveston yard recently completed the construction of two ferryboats for the State Highway Commission of Texas. They will operate on the Galveston-Port Bolivar run, one of the vital links of Highway 87 connecting the State's rich industrial areas with its ports and refineries.

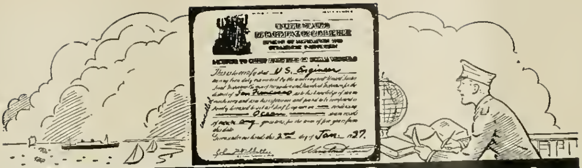
In building these vessels Todd employed a unique "upside-down" method, starting with the laying of the deck plating and working up towards the keel. The bottoms were then picked up with giant cranes, turned over and placed in drydocks for the building of the superstructure and installation of machinery. More than 900 tons of steel were required for the new boats. Each is 172 feet long and powered by diesel electric propulsion totaling 1730 horsepower. They were designed by Eads Johnson of New York, who has drawn plans for more than 40 ferryboats now in use in the United States. Todd Shipyards completed the construction contract two months ahead of time.

At present an average of 790 cars a day use this route and the previously used vessels had a speed of 9 knots and carried 22-24 cars. The new ferries have a speed of 12 knots and carry 50 cars each and will accelerate traffic at least 50 per cent.

Due to the unorthodox manner of these shipbuilding jobs, there were no launchings of the vessels from ways as in general practice. Instead, the drydocks were submerged, and the ferries towed out to the channel by tugs.



Picture shows shipbuilding job under way at Todd's Galveston yard where two "upside down" ferry boats are being built. Here is the main deck. Keel is laid on "top" last — and the whole thing turned over.



Your Problems Answered

by "The Chief"

"The Chief's" department welcomes questions—Just write "The Chief," Pacific Marine Review.

She Still Vibrates

FRANK FARRAN, Chief Engineer of the S. S. *Marine Reviewer* walked into the enginering office adjoining his stateroom somewhat out of breath from the long climb from the lower deck of the forward engine room. He was quite disappointed. At 0900 the Captain had received a dispatch from the Company headquarters to schedule arrival for 1300 instead of 0800 due to crowding of the docks at Los Angeles harbor. Another ship had to be moved to the oil docks in the morning, making room for the *Marine Reviewer*. His wife even now was driving down from San Francisco to meet him first thing in the morning. She would now have to wait a long morning for him. He had just finished resetting the engines to the new slow speed of 90 rev. The hum, throb and ship's noises sounded subdued and different. He settled himself at the desk and picked up the morning news sheet. He had heard most of the items on his radio on the news broadcasts last night.

Mac McCoy, the ship's First Asst. Engineer, entered the room followed by young George Cambell, the Third Asst. Engineer. They took seats around the table. Mac said, "Chief, I notice that old vibration is back again same as it was two trips ago when we made 90 turns. Like you were saying at the last seminar, the speed has come down to a point where some part of the ship is in tune with it. But what part of the ship's machinery is making such a slow speed? The screw is turning over at 90 revs. and that's only one and a half every second, much too slow for this vibration we have." Mac pointed to a water pipe in the corner and began shaking his finger trying to get into step with the vibrating pipe. The fan bracket also had a little fast vibration in it. He then shook his finger about like a concert conductor leading a band in a fast waltz. "This is about the rate the shaft is turning over. This superstructure is vibrating about three or four times as fast as the propeller is turning. What's the explanation of that?"

Farran was by this time watching the Irish First Assistant with interest. "You're right, Mac." He said. There certainly are no motors or pumps turning over as slow as three or four times the shaft speed. They are turning over anywhere from ten to fifteen times the shaft speed. So what does make the ship vibrate?"

"Mr. Farran, I don't see it either." George Cambell broke in. "There just is nothing that is moving that could be in tune with this vibration. What's more, I cannot see how the shaft would do it even if the speed was right in tune. The propeller was balanced last overhaul, and the shaft is true and straight. No bearings are hot and there is no indication of trouble anywhere and yet here we sit shaking with a gentle vibration.

Farran continued. "Well, I guess we will all admit that the power to keep this whole topside superstructure vibrating comes from the main propulsion plant. Nothing else is heavy or powerful enough to sustain this much motion in so much weight and size. So it must come from the shaft or propeller, but how at three or four times frequency?

The telephone on the desk rang. Frank answered and a voice could be heard. "Hello, Mr. Farran sir? This is the bridge. The Captain wants to talk to you. Hold the phone." Then the Captain's deep voice came through.

"Frank, what makes this whole bridge structure vibrate. It hasn't done this for a long time."

Frank answered. "It's the speed, sir. It will do this every time we run at between 88 and 92 revolutions. We can stop it by changing to 87 or say 95. It would be best to make 95 for the proper time and then drop to 87 later to finish the run and get in at the same time."

"Well, don't change now as I am running a line out until 1100, then pick up to 95. Call the bridge when you do so they can log it." The Captain hung up.

"That's good, Mac. At 1100 we go up to 95 and this vibration will stop. But in the meantime let's see if we can count this vibration rate. If we can see a uniform motion it is possible to count at a speed of up to about 400 per minute. You may doubt this but I think I can show you. There are two things to do. First, with your hand lying relaxed on the table get your finger tapping the table at the rate of the vibration. Do this for a half minute or so until your mind and finger are sort of beating with the vibration as you see it and as you feel it. If you are a little slow or fast you will notice it as a sort of a beat in which your count and the motion get into and then out of step. Then start counting in groups of four. At every fourth count tap the table a little harder like a negro jive band leader as he puts the cadence into the rhythm. And finally, count the groups of four as they rapidly go by. Do this for 10 seconds at first. Then multiply the count by four and we have the vibrations for 10 seconds. Again multiply by 6 (there are six 10-second intervals in a minute) and we have the vibrations per minute. Now let's try it."

If the Captain had walked into the engineering office during the next ten minutes he would surely have called the master at arms and had three lunatics arrested. They were watching the clock and beating time with their fingers and muttering to themselves.

Presently Cambell said. "I make it 21 sets of 4 in 15 seconds." McCoy said. "Nope, I make it 16 sets of 4 in 10 seconds."

And Farran compromised them. "Well, that makes 336 vibrations per minute for George, and 384 per minute for Mac. Now let me try it." Frank went through the procedure twice and then said. "I make it 22 sets of four in 15 seconds. That makes it 352 per minute. Now I think I can show you where there is a really big force pulse on the stern of the ship every time a propeller blade comes over the top. If we had a three bladed propeller, that would be 3 times 90 or 270 force pulses per minute and if the ship vibrated naturally at about 270 per minute we have the explanation of this vibration."

"But, Mr. Farran, we count more than the 270. The average of Mac's count and mine is about the same as your count, or let's call it 360 vibrations. The ship's natural period must be about this same rate of 360 per minute. So how could it come from the propeller giving 3 times 90 force pulses per minute." George was beginning to take a real interest in this problem now.

Mac's face broke into a broad grin. "Aw, Frank, why try to fool the lad with me around? You figured a three bladed propeller, did you not? And a four bladed wheel, which our ship has, would make 4 times 90 or 360 force pulses per minute and we have the cause of all this wiggle."

Cambell was now excited. "But, Mac, it is a three bladed wheel because I remember seeing it in drydock last time. That is, I think it is . . ."

Farran got out the report of the trial trip and looked up the propeller specification. Everything was given but the number of blades. All dimensions were there, the alloy of the metal, details of the nut and several pages of information but not a word as to the number of blades. Farran was amused but when pressed frankly admitted he could not remember, but based on the result of the vibration count, would bet that it was a four bladed wheel. He called down to the two second assistants on watch in the two engine rooms and they were not sure but would bet that the wheel was three bladed. Cambell then had an idea.

"I know one of the electricians took a picture of the ship in dock last year. I'll go see if the picture shows the wheels." He was gone at once.

While he was gone the argument waxed hot. A couple of junior engineers dropping in for keys to the spare part locker were asked and all guaranteed the three bladed theory.

McCoy spoke up. "I don't care what these guys remember or don't remember. I know that these propellers are 4 bladed because I now see that they must be to give this vibration rate. It is just as if I could see them when I can count the blades per minute and divide by the rpm shown on the tachometer. 360 divided by 90 is 4 and its 4 bladed they are."

Cambell rushed in out of breath. "Look, here they are, see? They are four bladed." Then his face fell. "Gosh, I could have bet they were three." McCoy said, "Well I guess that settles that."

Farran got up and went over to the blackboard screwed to the inboard bulkhead of the office. "We now have to show where this pulsating force on the stern of the ship comes from. I think you will all appreciate why the Navy and many of the merchant marine companies are going over to the five bladed propeller. We may think it strange that in this late year of ship construction we should just now be waking to the fact we need five blades instead of four or three. But remember that it was as late as 1940 when we began to use the all welded type of hull fabrication. Prior to that the ship's plates were noticeably thicker and thus heavier. The greater thickness was needed for the rivet strength. So for a given tonnage on the cubic foot basis the ships today are many tons lighter in weight. But by better steel alloys and design they are just as strong as before. Thus we have the spring effect the same and a reduction in weight. This gives an increase in the natural vibration rate. Before, a four bladed wheel at 90 rev. or 360 pulses per minute would be too fast for the ship to follow and we did not have the continuous wiggle. Even the three bladed wheel at 70 to 90 rev. or 210 to 270 was too fast for the ship to follow."

Frank continued. "So now with a five bladed wheel we will have, say, 90 times 5 or 450 force pulses per minute and that is too fast for even these new light weight all welded ships to follow."

McCoy interrupted. "Frank, aren't you forgetting something? Can we not slow the screw down so that a five bladed screw gives the same vibration rate as the four bladed one? For instance, on this ship, at 72 turns, as many blades would pass top center per minute with five blades as with the present screw at 90 turns."

"Mac is right as usual. But true also is the fact that when we slow down to 4/5 speed or 72 revs., the horsepower and thrust has gone down so far that although the force pulse rate is in tune with the natural period of the ship's vibration rate, the actual force has reduced to the point where it is not enough to keep the vibration going. It just is too weak to bother us. Therefore, there is a real advantage in the five bladed screw."

"Yes, but how does a true-balanced propeller give a pulsating force in the ship?" Mac asked thoughtfully. He had witnessed the propeller balance at the shipyard a year ago.

Farran continued. "I like to look at the force on the bottom of the ship as due to pressure." He was sketching now. "The pressure at any specific point on the bottom of a ship, in pounds per square foot, is equal to the weight of a square foot column of water reaching to the surface. In pounds per square inch it would be this figure divided by 144. If our specific point is one foot below the surface, our column of water becomes one cubic foot, or 64 pounds weight for our square foot of ship area. Dividing (see Fig. 1) we have .444 pounds per square inch pressure. At 10 feet submergence it is 4.44 and at 20 feet it is 8.8 pounds per square inch. This force is all over the hull of the ship under water. When summed up it is the total support of the ship and is exactly equal to the weight of the ship."

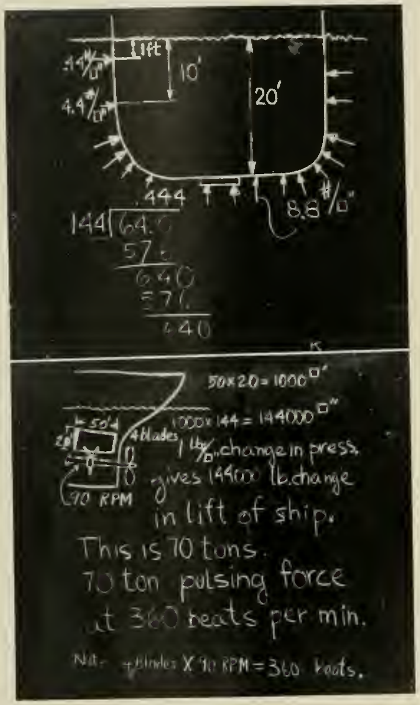


Figure 1 (top) and Figure 2.

"Now as each propeller blade comes around past any point, a pressure gage reading between that point and the surface would show an increase of pressure on the after surface of the blade and a drop of pressure on the forward side of the blade due to the pile up or acceleration of the water aft and the suction forward. If we assume there is a drop in pressure due to a blade coming by the bottom of the ship which causes a drop in pressure of only one pound per square inch, then over a surface of say 50 by 20 feet there would be a drop in support of the ship at that area of 70 tons. This, of coures, comes and goes with the passing of the blade and hence we have a pulsating force of 70 tons on each side of the ship. It probably would occur on one side just before it occurs on the other due to the rotation of the blade and there would be a sort of side wiggle or slap on one side, then on the other. So we have a sort of up and down and sidewise motion that shakes the ship once for every blade that comes around. The answer is to have these forces come faster so that the ship cannot follow them. More blades on the wheel will do it and also each blade will be smaller and accelerate less water with less force on the ship's bottom." See Fig. 2.

Mac asked. "But if these Naval Architects are so good, why don't they calculate the natural period of vibration of the ship and select the right propeller?"

Farran's reply was serious. "Mac, I am afraid that all engineers and builders must learn by their mistakes. This seems to be true in all branches of engineering. Mathematics helps us to predict and avoid mistakes made by others. On big and untried projects the task is divided up into many little jobs, each tried out separately first, so that any mistakes may be little ones and not serious. Laboratories are busy all the time testing new materials, new ways of assembly and new designs to get data so that calculations may be made on the whole project. These new all-welded ships presented many new problems, the answer to which could only be found by a full scale model. You may be sure that engineers are learning all the time."

"And George, don't forget that before our next seminar you are to take the vibration out of that auxiliary throttle valve and also that section of main steam line in the boiler room."

Long Beach Continues Expansion

With its present facilities overtaxed, the Port of Long Beach is continuing its $100,000,000 port development program by calling for bids, opened July 6, for 17,750 feet of piling to support a new transit shed at Berths 9 and 10, Pier A, Outer Harbor. Bids have also been opened for 3,920 feet of pipe and fittings for this shed.

The new transit shed will conform to the steel and concrete clear span type of construction now in use by the Port and will be 806 feet x 200 feet in size.

Port officials hope to have the new transit shed in operation by midsummer of 1951. It is estimated that the cost of the entire project will total more than $2,000,000.

Also scheduled for completion is the 136 acre fill now underway in the southeast basin adjacent to Pier A. This fill will provide badly needed open storage area to be used in conjunction with the operation of the new shed.

Pacific
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Insurance Aspects of Export Packing and World Port Conditions

By J. P. DOUGHERTY
Insurance Company of North America

EDITOR'S NOTE: The influence of packing and stowage on world trade and therefore on shipping volume is one that is too often overlooked. There is an immediate dollars and cents angle reflected in insurance rates which are based on all of the risks of the voyage. These risks are increased directly as to the distance, the routing, the nature of the cargo, the vessel and its management, the condition and handling of the goods, and the problems to be encountered in the ports of loading and discharge.

In the following revised abstract of a talk delivered at the University of Southern California Institute on Packaging and Materials Handling June 14, 1950, there is a detailed outline of conditions in ports throughout the world and an explanation of some of the hazards. We are quoting the conditions in a selected group of the ports.

TOGETHER with exporters, transportation carriers, and consignees, present day underwriters form a business partnership on practically every commercial venture in foreign trade and commerce.

The immediate purpose of this partnership is the selling of American-made merchandise. A part of this purpose is to maintain and expand foreign markets so that future ultimate benefits may be had by all of its members.

Ocean Marine insurance is a part of foreign trade, in that it has the purpose of providing for indemnity against losses to export shipments. Without insurance, merchants would hesitate, if not refuse, to engage in transactions, at least until earlier shipments had arrived, or on which a payment had been received. Banking credits, in fact international credits of all kinds, which are extended to a great degree because of insurance, would be difficult, if not impossible to satisfactorily arrange. Indeed, there is little doubt that the security provided by ocean marine insurance has accelerated the exchange of goods and increased the tempo of our foreign commerce. It is today a necessity.

The underwriters realize that the factors of competition and margin of profit to a large extent control how much business an exporter can do, and how much money he can afford to allot for insurance, storage, transportation and export packing charges. They cannot afford to have him outpriced in the highly competitive trade possibilities that exist abroad today. It is our aim to assist our exporters in every way possible, so that they may remain in a firm competitive position. The campaign for safe delivery is a part of such assistance.

It is often overlooked that an ocean shipment, in addition to moving via steamer, may also move via rail, barge, lighter, motor truck, dray, horse and wagon, animal pack, native carrier or any combination of these means. There are also to be foreseen, the peculiar damage susceptibilities of the commodity itself, and the atmospheric, temperature, and weather conditions that will be encountered at points and places enroute to and at destination, the number of handlings through which a shipment will pass, and the stowage conditions that will be afforded on various transporting vehicles. And there is the length of time that the shipment will be exposed to damage possibilities or to possible thieves or pilferers. The longer exposures only extend the possibilities of loss.

Much of the possibilities of damage and loss to an export shipment can be traced directly to the port conditions existing at various foreign ports through which our merchandise will pass and where it will be handled, transshipped or discharged. The conditions at the various ports will be dependent to a large extent upon the discharge facilities available, their local labor situation, the degree of carelessness in handling merchandise that longshoremen and stevedores afford cargo, and the possible delays and congestions that may be existent at these ports. There will also be the pilferage and damage possibilities, and the weather that may be expected at the ports.

I would like to cite for you the conditions which are existent at some Foreign Ports as indicative of what exists in the way of foreign port conditions today. You will notice that some are much better than others, but that all present various hazard possibilities.

BUENOS AIRES

Discharge Facilities—All cargo discharged alongside except that to be lightered to consignees in interior or along Riachuelo Canal.

Labor and Handling—Rough handling reported serious, especially for cargo destined to interior.

Delay and Congestion—None. Volume of import cargo has been reduced.

Pilferage and Damage—Considerable pilferage and rough handling on shipments lightered to interior, but under better control than heretofore due to decreased volume.

Climate—Rainy season June to August. Port not worked during rain.

RIO de JANEIRO

Discharge Facilities—Port is well equipped to handle all types of cargo mechanically and to provide covered storage as necessary.

Labor and Handling—Normal, but rough handling endemic.

Delay and Congestion—Port busy but operating below normal capacity and consequently no congestion. Nevertheless, delay of 30 to 90 days experienced in effecting delivery to consignees. Six days average free time allowed.

Pilferage and Damage—Decreasing, principally due to import restrictions. Electrical supplies, food-stuffs, pharmaceuticals, and hardware are main items pilfered. Large portion of loss and damage reported due to improper packing in cartons and paper bags.

Climate—Temperate. Rains more frequent November to March.

VALPARAISO (Port for Santiago)

Discharge Facilities—Most cargo discharged alongside. Steel lighters usually in good condition, but wooden lighters wet and leaky.

Labor and Handling—Discharge in hands of port administration, handling usually rough but equipment improving—much pilfering.

Delay and Congestion—Congestion decreasing, 60 to 90 day delay in effecting delivery due to consignees awaiting foreign exchange.

Pilferage and Damage—Most serious losses while in transit inland. Unsatisfactory packing responsible for much damage. Customs Police and Port Authorities tightening pilferage control.

Climate—Rainy season June to September averaging 15 to 20 inches.

CARTAGENA

Discharge Facilities—All cargo discharged alongside. Port area well protected.

Labor and Handling—Geared to high capacity—present limited cargo volume handled with dispatch.

Delay and Congestion—None. Eight to ten days required to liquidate manifests by Customs.

Pilferage and Damage—Increase in pilferage of shipments of cotton thread. Otherwise losses nominal.

Climate—Very heavy rains during October.

MEXICO CITY

Discharge Facilities—Cargo for Mexico City may come in through Laredo, Texas, or Vera Cruz via the government owned railway. Rolling stock is in short supply.

Labor and Handling—Perishable cargo usually stored in massive warehouses, and when stored in the open, is protected by tarpaulins.

Delay and Congestion—No congestion. Business difficulties and government regulations are restricting general imports. now confined largely to machinery and parts.

Pilferage and Damage—Reported principally occurring while awaiting transshipment to Mexico City. Carriers, including Postal Authorities, as a rule usually refuse claims for damage while in their custody.

Climate—Dry. Height of rainy season indicates only five inches per month.

CALLAO (Port for Lima)

Discharge Facilities—Most cargo landed direct to quay. Some lighterage from dockside to facilitate

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discharge. Watchman service provided, but reported ineffective.

Labor and Handling—Military regime has increased cost of living to the extent that general morality has hit new low. Much deliberate breakage, especially when stevedores are working on an overtime basis to expedite discharge.

Delay and Congestion—Not a problem *per se,* but shippers and consignees are both advised that every day goods are exposed in dock area, they are further exposed to malicious damage and pilferage.

Pilferage and Damage—Customs authorities ineffective in preventing large scale thefts of merchandise from cartons. All valuable cargo subject to pilferage, with auto parts and pharmaceutical preparations being major targets. Light packing and descriptive marking aggravate situation.

Climate—Practically no rainfall.

OSLO

Discharge Facilities—Accommodates over 40 ships alongside. Adequate tarpaulin supply for open storage. Most of area fenced, well lighted, and watched.

Labor and Handling—Most serious condition of port reported to be lack of skilled tallymen. Some wharfs unable to handle goods over 1000 pounds under cover.

Delay and Congestion—Small delay in customs due to shortage of inspectors. No congestion, but may occur during strike periods .

Pilferage and Damage—Not extensive. Ship-owners and others active in adopting controlling measures.

Climate—No outstanding features.

HONG KONG

Discharge Facilities—70% of cargo discharged alongside, balance lightered ashore in craft in good condition

Labor and Handling—Under strict control of port authorities. Much cargo destined for Shanghai off-loaded at Hong Kong.

Delay and Congestion—British Authorities employed vigorous measures to alleviate serious 1949 congestion. Conditions now relatively good and cargo under stringent control. Shippers should watch for rapidly changing conditions.

Pilferage and Damage—Principal losses on cigarettes, foodstuffs, perfumes, cotton piece goods and patent medicine. Non-deliveries of general cargo decreasing.

Climate—Rains February to May. Typhoons June to October.

KOBE—NAGASAKI—NAGOYA OSAKA—TOKYO—YOKOHAMA

Discharge Facilities—90% of cargo lightered ashore and provided covered storage. Lighters reported in poor condition because of inadequate cover provided for cargo.

Labor and Handling—All under control of S.C.A.P. supervised BOKEI — CHO. American handling methods introduced by U. S. Army.

Delay and Congestion—None.

Pilferage and Damage—Considered normal.

Climate—Typhoon season July to September.

SYDNEY

Discharge Facilities—14 miles of commercial waterfront in fine natural harbor. Only oil and timber lightered. Special bulk cargo berths available. Well equipped with mobile cranes, industrial tractors, etc.

Labor and Handling—Highly organized labor unions, and inexperienced labor create dockside irritations. Small packages frequently lost under larger consignments.

Delay and Congestion—Labor situation reported responsible for ship turn around time 3½ times that in the U. S. Port not normally congested, but importers have cargoes on wharfs longer than necessary due to shortage of normal warehousing. Long term building program underway.

Pilferage and Damage—Anti-pillage squads of Steamship companies and police reported effective. All sheds provided with locked damaged cargo areas.

Climate—Moderate. No well defined wet and dry seasons.

WELLINGTON

Discharge Facilities—Physically excellent, but some Steamship lines refusing to stop at New Zealand, because of slow turn around time caused by labor.

Labor and Handling—Insufficient dockside supervision resulting in non-delivery claims.

(Please turn to page 95)

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"A drastic reduction in our foreign commerce would seriously disturb our national economy and we must, therefore, help other nations to earn dollars by increasing our imports even though it may compete with some of our industries. Our help, however, can only be expressed in removing customs obstacles and in creating a favorable attitude towards imported goods. It is up to the other nations interested in earning dollars to produce and sell their products here. They must abolish export controls and bilateral agreements which limit the supply of goods for export to the United States. They must have confidence in our importers and finance their exports on the same basis as we finance our exports. Above all, they must competently promote their sales in all areas of the United States.

"A stable world economy cannot be attained through controls, bilateral agreements, exchange restrictions and quotas. It can only be attained through free trade by private enterprise and without government interference."

---

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Sailors Union Hall Dedicated

The new home of the Sailors Union of the Pacific at 450 Harrison St., San Francisco, was formally dedicated on June 16 with Governor Earl Warren of California officiating. Harry Lundeberg, Secretary-Treasurer of the Sailors Union of the Pacific and President of Seafarers International Union, presided at the ceremonies. Many congratulatory talks were made, followed by a powerful address by Governor Warren on the general maritime situation and the future of the industry.

The Sailors Union of the Pacific's colorful history, dating back to 1885, was reviewed. Since the first meeting was held to better conditions for seamen, and through many adverse circumstances, the Union has grown steadily in strength and gained legislation protecting seamen's rights and has obtained many betterments and privileges. On the lower floor of the new building is the Andrew Furuseth School of Seamanship, named for the man who was Lundeberg's only predecessor as Secretary of the Sailors Union of the Pacific and one of the first in the struggle for seamen's rights.

The new building, probably the finest union hall in America, is beautiful in design and is entirely air conditioned. The auditorium, on the top floor, has a seating capacity in excess of 2,000. It has an adjoining kitchen and dressing rooms convenient to the stage. On the mezzanine floor there are sixteen outside, single and connecting offices.

The union meeting room is located on the main floor, just beyond the main entrance to the building. On this floor, also, is the library and the local and national Union offices, as well as the offices of some of the affiliate unions. On the lower floor is the restaurant, the bar, the baggage room, locker room, a shower room and a steam room, as well as a fully equipped gymnasium where there will be boxing, basketball and other athletic activities. There are parking facilities, sun decks on each off-set of the building and on the top, and a foyer with exhibits of model ships.

Trustees of the building are Charles Brenner, Thomas Hookey, Harry Johnson, Harry Lundeberg and Morris Weisberger. Architect of the building was William Gladstone Merchant, and its debt-free completion is a fine tribute to the success of Lundeberg and his associates.

At the opening ceremonies every important American flag line was represented by its top officials, and among the thousands who crowded into the building there were noted practically all the important figures in the industry. The cordiality expressed on every side was expected to continue on into the future relationships of ship operation.

Harry Lundeberg addressing a great crowd of shipping leaders of all ranks. Facing him to the right are Governor Warren and Congressman Jack Shelley. The model of the new APL V-2000 was presented to the Union by APL's Vice-President, Gene Flaherty, who is seated behind Lundeberg.

Following the cornerstone laying of the Sailors' building the crowd surges through the doors while another mason finishes the job.

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ANNOUNCING THE APPOINTMENT OF

H. J. Wickert & Co., Inc.

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AS OUR REPRESENTATIVE FOR THE SALE OF

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MARINE AND INDUSTRIAL HEAT EXCHANGES

For The Following Territory

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OREGON - - - - - - - - - - -	(Entire State)	MARINE EQUIPMENT
WASHINGTON - - - - - - - - -	(Entire State)	MARINE EQUIPMENT

DAVIS ENGINEERING CORPORATION

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REPRESENTATIVES

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STEERING MACHINES

WINDLASSES

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AND AUXILIARY DECK EQUIPMENT

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"Limburg" Inspected By Travel Agents

The Transpacific Transportation Company recently held a buffet party aboard the S. S. *Limburg* for the benefit of local travel agents, giving them the opportunity to inspect one of the Line's C-3 12 passenger cargo vessels.

These ships are being operated in the service from the Pacific Coast via the Panama Canal to ports in South and East Africa, returning via East Coast ports of South America to the Pacific Coast. Frequently these vessels are used as first segment in connection with round the world itineraries.

Left to right: Cornelis Winkler, President of Transpacific Transportation Company; Harold H. Taft, Passenger Traffic Manager; and the "Limburg's" Capt. C. Muyskens, snapped on the "Limburg" while in San Francisco.

Aloha!

The traditional Hawaiian symbol of friendship, the flower lei, was presented on June 30th to the new president of Matson Lines, Randolph Sevier, by pretty Matson employee Jean Durkee, as he took office. John Cushing, right, retiring president of Matson, remains on the Matson board, and at the same time becomes president of the Oceanic Steamship Company, a Matson subsidiary.

Sevier, who went to work for Matson in 1923 as a clerk on the docks in San Francisco, has been executive vice president of Matson since September 1948.

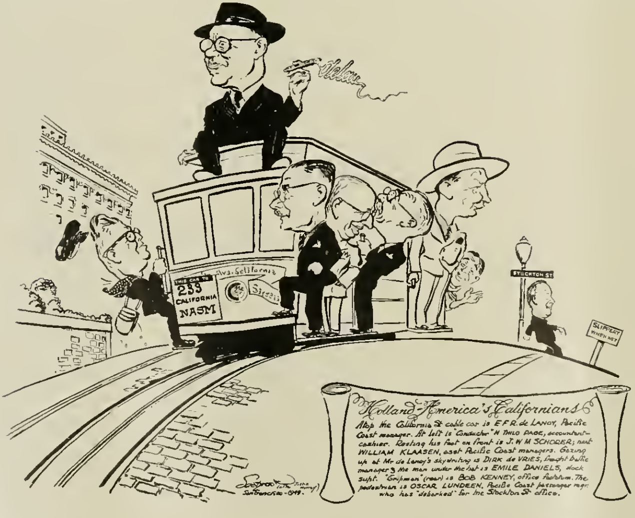
de Lanoy Retires

E. F. R. de Lanoy, Pacific Coast manager for Holland-America Steamship Line, will retire in August after completing 43 years with the Company

Starting with the company in Holland, the country of his birth, de Lanoy came to the United States, moving to the West Coast in August 1920, to open a new service for the line, operated jointly with the Royal Mail Lines, Inc.

Successor to de Lanoy will be J. W. M. Schorer who has been with the company over 25 years, and de Lanoy's assistant for three years. Schorer was in charge of the Los Angeles passenger office before the war and in 1938 was transferred to London. He came to San Francisco in 1947.

De Lanoy will retain his position as president of the Netherlands Chamber of Commerce in San Francisco.


THIS CAR TO
233
CALIFORNIA
NASM
Avs. California
Streets
STOCKTON ST
SLIPPERY WHEN WET
Holland-America's Californians
Atop the California St cable car is E F R. de LANOY, Pacific Coast manager. At left is "Conductor" H THILO PAGE, accountant-cashier. Resting his feet on front is J. W M SCHORER; next WILLIAM KLAASEN, asst Pacific Coast managers. Gazing up at Mr de Lanoy's skywriting is DIRK de VRIES, freight traffic manager & the man under the hat is EMILE DANIELS, dock supt. "Gripman" (rear) is BOB KENNEY, office factotum. The pedestrian is OSCAR LUNDEEN, Pacific Coast passenger mgr. who has "deboarded" for the Stockton St office.
San Francisco-1949

Recently the magazine of the Nederlandsch - Amerikaansche Stoomvaart Maatschappij (the Holland-America Line) contained this drawing of the San Francisco staff of the line.

With Elie Francois Rene de Lanoy on top and Johan Willem Meinard Schorer, ex acting lance corporal in the British Home Guard, out in front, the sketch includes H. Thilo Page, William Klaasen, Dirk de Vries, Emile Daniels, Bob Kenney and Oscar Lundeen.

Pacific Transport Lines' California-Hawaii Service

The Pacific Transport Lines of San Francisco announces the expansion of its transpacific service to include a scheduled monthly cargo-passenger sailing between California and Hawaii. It is expected that this will not only extend the competitive situation in Hawaiian-West Coast trade but, more particularly, will provide a greater volume of trade through West Coast ports because of two factors for which Pacific Transport Lines is responsible.

One of these factors is the freight solicitation setup under which Pacific Transport Lines works through the Ajax Worldwide Freight Corp. for the development of traffic from east of the Rocky Mountains, thus influencing shipment through West Coast ports when it might otherwise go the longer way via Atlantic or Gulf. Also, the connections of Pacific Transport Lines in the Orient will permit an increasing volume of cargo from Oriental ports destined for Hawaii and westbound cargoes originating in Hawaii but destined for points in the Orient.

The S.S. *America Transport,* one of the most modern liners afloat, will sail from San Francisco July 18 to inaugurate the new steamship service, and at the same time the company will open its own offices at Pier 13, Honolulu, under the management of George Over, Jr., Hawaiian steamship executive and former marine super-

Richard A. McLaren, president,
Pacific Transport Lines

A FREIGHTER CAN BE BEAUTIFUL

S. S. "Pacific Transport," flagship of Pacific Transport Lines, Inc., recently set what is believed to be a record trans-Pacific crossing for her class. She made the 4531-mile voyage from Yokohama to San Francisco in 10 days, 1 hour, 42 minutes for an average speed of 18.7 knots. On her previous voyage from North China to Los Angeles, the vessel claimed another record of 13 days, 5 hours for the 6040-mile run with an average speed of 19.05 knots. She is a C-3 design, 12,500 deadweight tons, and cost close to 1½ million dollars. The vessel has luxurious accommodations for 12 passengers. The "Pacific Transport" is a sister ship to the "America Transport" which inaugurates the new Hawaii service.

intendent of the Inter-Island Steam Navigation Company, Ltd., Honolulu.

The *America Transport* has a deadweight tonnage of 12,487, a normal speed of 18 knots, and length of 490¾ feet. She had a gallant war record as troop carrier and is known to thousands of GIs whom she repatriated from throughout the world. She is one of five large freighters (C-3s) owned by Pacific Transport Lines, a wholly California-owned company.

Maitland S. Pennington, vice president, Pacific Transport Lines.

The Pacific Transport Lines has been progressively successful ever since it was organized. Service has been provided from both San Francisco and Los Angeles to Yokohama, Kobe, Hongkong, Formosa, Takubar, Manila and Cebu, and when appropriate, to Shanghai and Keelung.

A recent important development by the company was its appointment of Pope & Talbot, Inc., as its agents in Oregon and Washington which was aimed at extending its services to a broader shipping public. Since there is considerable trade between Hawaii and the Pacific Northwest, the new service should indirectly stimulate this trade.

Officers of Pacific Transport are: Richard A. McLaren, president; Maitland S. Pennington, vice president; George E. Talmage, vice president, traffic; J. L. Adams, secretary; J. B. McCargar, treasurer; James O. McManus, operating manager. Board members are: J. L. Adams, C. R. Blyth, Melvin Duncan, Paul I. Fagan, H. L. Haehl, J. B. McCargar, Richard A. McLaren, G. C. Wheat, Brayton C. Wilbur.

California Maritime Academy Applications

The California Maritime Academy has announced that applications are now being received for candidates for admission to the next class beginning September 4th. The Academy gives a three year course leading to the Bachelor of Science Degree, licenses in the U. S. Merchant Marine, and Ensigns commissions in the U. S. Naval Reserve. Candidates who pass the Navy physical examination receive free subsistence, and in addition, a $200 per year allowance to cover the cost of uniforms, books, and special equipment. All students make the annual three-months' training cruise to foreign ports on the famous Training Ship *Golden Bear*, giving a closely integrated course of instruction, both theoretical and practical, in maritime operating subjects for officers. In addition, a course in Naval Science is conducted by officers of the United States Navy in the same manner as at the leading universities throughout the United States.

Candidates must be American Citizens, graduates of high school, and come recommended by three responsible citizens of their communities. The age limits are from seventeen to twenty-three years of age, with veterans eligible until twenty-seven years of age. Candidates must be unmarried and remain so throughout the course.

Interested candidates should write to the Commandant of Midshipmen, California Maritime Academy, Vallejo, California, for information and application blanks.

Salen-Skaugen New Japan Service

The Salen-Skaugen Line through Interocean Steamship Corporation, United States General Agents, announces that effective with the MS *Skaubo* in July all vessels in the Salen-Skaugen Line's Pacific Coast service will call regularly in Japan.

The Salen-Skaugen Line is represented throughout Japan by Kawasaki Kisen Kaisha with centralized management through the Line's own office in Tokyo. The ports served will be Yokohama, Nagoya and Kobe on a twice-monthly basis. The Motorships *Sven Salen, Christer Salen, Axel Salen, Skaubo, Skauvann, Knut Bakke,* and *Ida Bakke* are presently operating in the Salen-Skaugen Line, one of the few lines offering two separate westbound services, one direct from California, the other from the Pacific Northwest.

Nistal Appointed by Radiomarine

Gerard E. Nistal, formerly on the editorial staff of "Aero Digest" magazine, has been appointed Advertising and Sales Promotion Manager of Radiomarine Corporation of America. He will supervise all advertising, promotion and public relations activities for all divisions of the corporation, and will co-ordinate sales promotion effort, with special emphasis on dealer service and relations.

A wartime Navy veteran, Nistal was previously affiliated with Surface Freight Corp. of this city as Assistant to the President in charge of Advertising and Promotion and with Lear, Inc. of Grand Rapids, Michigan, as Advertising and Publicity Manager. He has also gained nationwide prominence as a free-lance industrial writer-publicist and received the U. S. Junior Chamber of Commerce Distinguished Service Award in 1947 in recognition for outstanding professional and public service.

One difference between a bachelor and a married man is that when a bachelor walks the floor with a baby, he's dancing.

The reason why the average girl would rather have beauty than brains is that the average man can see better than he can think.

New Official Navy Ship Designations

Battleships	BB
Heavy Cruisers	CA
Large Cruisers	CB
Light Cruisers	CL
Anti-Aircraft Cruisers	CLAA
Task Fleet Command Cruisers	CLC
Hunter Killer Cruisers	CLK
Aircraft Carriers	CV
Heavy Carriers	CVA
Large Carriers	CVB
Small Carriers	CVL
Escort Carriers	CVE
Destroyers	DD
Destroyer Escorts	DDE
Hunter Killer Destroyers	DDK
Radar Picket Destroyers	DDR
Submarines	SS
Anti-Submarine Submarines	SSK
Guided Missile Submarines	SSG
Transport Submarines	SSP
Radar Picket Submarines	SSR
Oiler Submarines	SSO
Cargo Submarines	SSA
Amphibious Force Flagships	AGC
Cargo Ships, Attack	AKA
Transports, Attack	APA
High Speed Transports	APD
Landing Ships, Dock	LSD
Landing Ships, Infantry	LSI
Landing Ships, Tank	LST
Landing Ships, Vehicle	LSV
Landing Ships, Medium	LSM
Landing Ships, Rocket	LSMR
Minesweepers	AM
Mine Layers	CM
Mine Layers, Coastal	CMC
Light Mine Layers	DM
Mine Sweepers, High Speed	DMS
Escort Vessels	DE
Escort Vessel, Radar Picket	DER
Submarine Chasers	SC
Submarine Chasers, Large	PC
Eagles	PE
Frigates	PF
Gunboats	PG
Motor Gunboats	PGM
River Gunboats	PR
Motor Torpedo Boats	PT
Yachts	PY
Ammunition Ships	AM
Store Ships	AF
Hospital Ships	AH
Cargo Ships	AK
Oilers	AO
Transports	AP
Repair Ships	AR
Destroyer Tenders	AD
Ice Breakers	AGB
Submarine Tenders	AS
Net Laying Ships	AN
Ocean Tugs	AT
Seaplane Tenders	AV
Floating Dry Docks	ARD

Note: Over 100 lesser ships are omitted.

DRIES HARD as STEEL

PERMADOL MARINE PRIMER GREEN

can be recoated in 2 hours!

In your never ending search for economy and efficiency in the battle against corrosion you will appreciate deeply the qualities of Permadol Marine Primers.

For this new protective primer drys hard as steel and can be recoated in 2 hours! In dry dock, where time is limited this unique feature permits you to complete priming and finish coating in far less time than ordinary primers.

Not only exceptionally fast drying, Permadol Marine Primer offers four other features which make it particularly advantageous in ship and dry dock work — 1. Rust inhibitive powers of basic pigments; 2. Elasticity of film; 3. Fine adhering qualities; 4. Special hiding and covering powers.

Insist on Permadol Marine Primers. You'll be glad you did.

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Mar-Dustrial Sales & Service
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S. F. Naval Shipyard is First in Safety

Rear Adm. B. J. Rodgers, Twelfth Naval District Commandant; William Bell, president of San Francisco Naval Shipyard Employees Association; Dr. Ned Dearborn of Chicago, President of the National Safety Council; and Captain A. L. Becker, commander of San Francisco Naval Shipyard, participated in a Yard safety rally on June 26th at which the Secretary of Navy's Safety Achievement Award, and the National Safety Council's first place award for industrial safety in the marine industry was presented to the Yard's 5500 safety-conscious men and women. R. B. Ahern is Safety Superintendent of the Yard.

Industrial Leaders' Honolulu Cruise

Participating in the Navy's Task Group Zebra cruise, from Honolulu to the West Coast early in June, were many members of the National Security Industrial Association. They flew to Honolulu on the Navy's *Mars.*

Industrial leaders from the West Coast, most of whom are shown in the accompanying photograph taken in Honolulu, were: William E. Butts, Enterprise Engine & Foundry Co.; Ray O. Barnes, General Cable Co.; Eugene D. Bennett; Edwin M. Blakeslee; William G. B. Euler. Pacific Gas & Electric Co.; David H. Evans, Hughes Tool Co.; Victor P. Greiser; Frederick L. Hewitt; Elmer B. Johnson; Anthony J. Ketman; Lloyd Mazzera, Bank of America; Burton W. Pickard, Standard Oil of California; Thomas E. Springer, Douglas Aircraft Corp.; Arnold Grunigen Jr., J. Barth & Co.; John N. Rosekrans, Spreckels Co.; Dr. Ralph Krause, Stanford Research Institute; H. L. Hoffman, Hoffman Radio Co.; Harley Knox, Mayor of San Diego; Vice Admiral Calvin T. Durgin, USN; Capt. Leroy Simpler, USN; Timothy G. Cornish, Hercules Powder Co.; Dr. Robert K. Cutter, Cutter Laboratories; Frank M. Falge, General Elecrric Co.; Cecil E. Freeman; David J. Galen, Crown Zellerbach Co.; John P. McArthur, Worthington Pump Co.; Rear Admiral Horace D. Nuber, USN, (Ret.), National Security Industrial Association; J. Gilbert Peterson; Samuel W. Small; Harold Sorg; Gilmore Ware, Pacific Bridge Co.; Russell H. Wellington, California Ink Co.; John A. Chartz, Dalmo Victor Co.; John E. Barber, Consolidated Western Steel Corp.; William W. Beadle, Byron Jackson Co.; John H. Clippinger, Hoffman Radio Corp.; James H. Malarkey; Robert P. Shorrock Sr.; Charles D. Parr.

One of the Navy's guests was John P. McArthur of Worthington Pump Company. Here he is being transferred from USS "Toledo" to USS "John R. Craig" at sea. In the distance (1200 miles) is San Francisco. In the other direction (1200 miles) is Honolulu.

Announcing a New
CALIFORNIA • HAWAII
Cargo Service

Effective July 18, scheduled monthly calls will be made at Honolulu, outbound and homeward, as part of our California-Far East service which is now maintained on 12 day sailing frequency with modern 18-Knot cargo liners.

Deep tanks, ventilated stowage, refrigeration, security lockers, limited passenger accommodations.

PACIFIC TRANSPORT LINES, INC.

San Francisco 11
244 California Street
YU 2-6221

Ets-Hokin & Galvan Distributors for Hose McCann

Making official what has for some years been a practical fact was the announcement last month by B. H. Hose, President of Hose McCann Telephone Co., Inc., of the appointment of Ets-Hokin & Galvan as the exclusive California distributors of their products.

C. Todd Hecker, Sales Manager of Ets-Hokin & Galvan, in discussing this new appointment, pointed out that since before the war Ets-Hokin & Galvan has sold, serviced and carried a stock of replacement parts for Hose McCann's principal line, their sound-powered marine telephones. With this new announcement additional items will be added so that prompt delivery can be made on any requirements.

Hose McCann are pioneers in the sound-powered telephone field which differs from the conventional telephone service in that the phone is actuated solely by the sound waves of the voice. The transmitter and receiver units in the handset transmit and receive speech in clear, crisp tones free from distortion or "trying" noises.

No battery or ship's current is required to operate a sound-powered telephone, thus insuring ship's control of communication system in an emergency.

Of interest is the fact that Hose McCann telephones have been selected by the Department of Commerce Maritime Administration for installation on the U. S. Lines' super liner *United States.* This installation is being made at Newport News Shipbuilding & Dry Dock Co. and will include the recently approved new models.

A copy of the Hose McCann catalog is available from Ets-Hokin & Galvan.

Diamond Power Appoints Sales Mgr.

Willis P. Thomas, President of the Diamond Power Specialty Corporation, Lancaster, Ohio, announces the appointment of Lyle B. Schueler as Sales Manager.

Schueler has been active in the steam-electric power equipment production and utilization fields since 1929, and serves on numerous technical committees of Engineering Societies and organizations.

Lyle B. Schueler

M. J. GIGY & ASSOCIATES
112 MARKET STREET, SAN FRANCISCO 11
West Coast Representatives for
M. L. Bayard & Co., Inc.
Seaboard Machinery Corp.
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are proud to participate in the outfitting of
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Hagan Corporation Appointments

Gordon S. Schuhmacher

Gordon S. Schuhmacher has been appointed district manager in Los Angeles for Hagan Corporation, Pittsburgh combustion and chemical engineering firm, and its subsidiaries, Calgon, Inc., Hall Laboratories, Inc., and The Buromin Company. He succeeds R. L. Sullivan, who has resigned.

D. J. Erikson, president of Hagan Corporation and subsidiaries, also announced that Schuhmacher will be assisted by Joseph R. Shafer.

Schuhmacher joined Hagan Corporation on July 25, 1942, for service in the Los Angeles territory. Prior to this date he was associated with Consolidated Steel Corporation at Wilmington, Calif. He holds a B.S. degree in engineering from the University of Kansas, is a member of Tau Beta Pi and registered in the State of California as a professional engineer in chemical engineering and also in petroleum engineering.

Joseph R. Shafer

Shafer joined Hagan Corporation on December 1, 1941, as a service engineer. A graduate of the California Maritime Academy with a B.S. degree in Mechanical Engineering, he was granted military leave of absence in October, 1942, and served three years in the United States Navy before returning to his engineering work at Hagan. He is also a member of A.S.M.E.

Kern Appointed Sales Manager of Winslow Engineering

Appointment of W. Ray Kern as sales manager of Winslow Engineering Company, manufacturers of Winslow filters and elements, has been announced by Wm. G. Nostrand, vice-president in charge of sales and engineering for the Oakland, California, firm.

Kern assumed his new duties on May 15 after resigning as vice-president and general manager of Berglund Tractor and Equipment Company. He had spent the past fifteen years with the Berglund organization, which under his leadership had become one of the most successful distributors of Caterpillar tractors and P & H excavators in the nation.

Kern's long experience in the field of heavy machinery and affiliated industries dates back to positions which he held in prior years with Enterprise Engine and Foundry Company and with Frisco Standard. While with the latter concern, he was associated with Charles A. Winslow, founder and president of the company for which he will now be in charge of sales.

R. J. Wigg To Represent Powell Valve in Pacific Northwest

Robert J. Wigg has been appointed Sales-Service Representative for The Wm. Powell Company, valve manufacturers, Cincinnati, Ohio. Wigg, whose headquarters are 317 Builders Exchange Building, Portland 4, Oregon, will call upon the trade in Oregon, Washington and Idaho, heretofore covered by Chas. M. Keyser.

Looking at it from any angle ... it's a busy Port!

Cargo moving across Pier A, Outer Harbor

Aerial view showing portion of Pier A

Increasingly larger shipments are being handled over the wharves of the Port of Long Beach. Cargos including steel, cotton, coal, coke, newsprint, crude rubber, pipe, iron ore, wickerware, rattan, hemp, coffee, tea and tin are brought in from around the world. The speedy and efficient handling of these cargos is proving to everybody connected with transportation that this is truly AMERICA'S MOST MODERN PORT.

The Port of Long Beach
AMERICA'S MOST MODERN PORT ★ CALIFORNIA

McClanahan to Standard Oil Board

Election of E. J. McClanahan to the board of directors of Standard Oil Company of California is announced by R. G. Follis, board chairman.

E. J. McClanahan

McClanahan has been a vice-president since 1943, specializing in marketing activities.

He joined Standard in 1912. Since, he has served with the company in various Pacific Coast cities, in Alaska, and as district sales manager for the Hawaiian Islands.

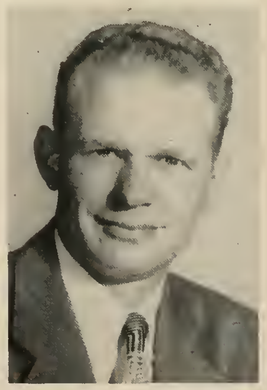
He has held such positions as manager of sales development, presidency of Standard Stations, Inc., and general manager of marketing, and has been active in civic affairs in San Francisco and in Hillsborough, where he lives.

H. J. Wickert & Co. To Handle Markey And Davis Lines

Henry Wickert, president of the recently formed H. J. Wickert & Co., Inc., 770 Folsom St., San Francisco, announces the appointment of his firm as California sales representative for Markey Machinery Co., Inc. of Seattle, manufacturers of anchor windlasses, cargo winches, capstans, towing machines and steering gears.

Represented also by the Wickert firm is Davis Engineering Corporation of Elizabeth, N. J., makers of "Paracoil" marine products. Marine territory to be covered will be from San Luis Obispo north to Washington. The Wickert territory for Davis Engineering's industrial line is Northern California only.

Henry Wickert



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&
CHARTERERS
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W. R. Chamberlin & Co.
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Nordberg Appointments

James A. Friend has been appointed senior vice president of Nordberg Manufacturing Company, Milwaukee, Wisconsin, according to an announcement by Robert E. Friend, president. James Friend, former vice president and general purchasing agent, will take over the duties of F. Howard Kilberry who resigned to become management consultant in charge of the Superior Engine Division of the National Supply Company at Springfield, Ohio.

James A. Friend,
appointed Senior Vice-President of Nordberg.

Floyd T. Finley has been appointed general purchasing agent of the Milwaukee division of Nordberg to succeed James Friend.

It is also announced that D. A. Cheyette, vice president of the Crusher Division, has been elected to Nordberg's board of directors.

Arthur W. Mueller was appointed assistant controller of the company.

Nordberg Manufacturing Company manufactures heavy duty diesel engines for stationary and marine applications, gasoline marine engines, mining and quarrying machinery, mine hoists, machinery for railway track maintenance and special machinery for special purposes.

Tubbs' Eastern Distributors

Appointments of the first three Atlantic Coast disributors for the products of the Tubbs Cordage Company of San Francisco, California, were made public this week. They are:

Marine Service, Inc. of Boothbay Harbor, Maine, of which Delbert Ham is manager. D. N. Kelley and Sons, Fairhaven, Massachusetts, operated by F. Standish Kelley. Brunswick Marine Construction Corporation of Brunswick, Georgia; Egbert Moxham, President, F. W. Beasecker, Sales Representative.

The Tubbs Campany, whose mills are located in Seattle, Washington; San Francisco and Orange, California and Manila, Philippine Islands, has been prominent in West Coast, Gulf and intercontinental trading areas for the past 93 years. They entered eastern markets for the first time late last Fall when arrangements were completed for exclusive eastern representation of the Tubbs Company by Paulsen-Webber Cordage Corporation of New York, Boston, Philadelphia, Baltimore and Norfolk.

Appointments of the new distributors were announced by Fredrik B. Paulsen, President of Paulsen-Webber.

Raytheon's Percy L. Spencer Honored

Percy L. Spencer, vice president in charge of the Power Tube Division of Raytheon Manufacturing Company, Waltham, Mass., was recently granted an honorary degree of Doctor of Science by the University of Massachusetts at Amherst. He joined Raytheon in 1925 after being associated with the Submarine Signal Company, now a division of Raytheon. He has devoted more than a quarter of a century to important electronic development work, including the development of the vacuum tube for use in the proximity fuse, and making the magnetron manufacturable in quantity in World War II.

Percy L. Spencer

Pacific Radio Marine Corporation Formed

Pacific Radio Marine Corporation was recently founded and located on the waterfront at Berth 73, San Pedro. Appointed general manager of the new corporation is C. Warren Wells, who was formerly district manager for the Radiomarine Corporation of America in Southern California.

The company represents the Robert Dollar Company's Communications Equipment Division, and has complete facilities for the maintenance of marine electronic equipment.

Girl Wanted

At Esther Hall, a business girl's dormitory in Des Moines, the telephone is located in the dining room. When it rings, the nearest girl picks up the receiver and says, "This is Esther. Who in the hall do you want?"

APL Honors Its Italy Traffic Manager

Luigi Semino, American President Lines' Freight Traffic Manager for the Mediterranean, on his first visit to the United States in eighteen years, was the guest of honor at a luncheon in San Francisco July 6, attended by thirty APL executives and officials.

Highlight of the affair was the presentation to Semino by Company President George Killion of a diamond and ruby studded gold pin emblematic of the latter's 25 years of service with American President Lines. Coincidentally, the presentation was made on the 25th anniversary of Semino's joining the company. He makes his headquarters at Genoa, Italy.

George Killion, President, American President Lines, presents 25-year service pin to Luigi Semino, APL Freight Traffic Manager in Mediterranean, at Company luncheon for Semino in San Francisco. The latter was on his first visit to APL headquarters in San Francisco. Pictured above (L to R) are: John M. Diggs, Vice President Passenger Traffic; W. K. Varcoe, Vice President Freight Traffic; M. J. Buckley, Senior Vice President; Killion, Semino, and Arthur B. Poole, Vice President and Treasurer.

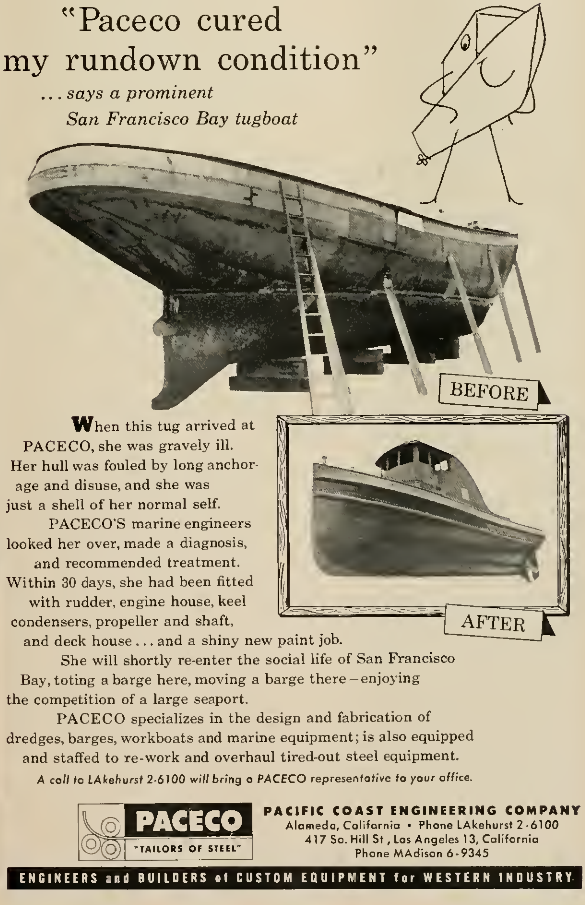
Enterprise, Adel, General Metals Combine

Directors of the Transamerica Corporation's three majority-owned metal products manufacturing companies have approved merger plans for a new $13,000,000 firm, Sam H. Husbands, president of Transamerica, has announced. The three companies are General Metals Corp., Adel Precision Products Corp. and Enterprise Engine and Foundry Co. Enterprise and Adel become divisions of General Metals Corp.

Individual functions and factories of the three units will not be disturbed.

Corporate office of consolidation will be at the Enterprise plant in San Francisco. W. E. Butts, president of Enterprise, becomes president of consolidation. President DeRitter, of General Metals and Adel, becomes chairman of the board.

William E. Butts



"Paceco cured my rundown condition"

... says a prominent San Francisco Bay tugboat

BEFORE

AFTER

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De Laval Bulletin Describing IMO Rotary Pump

De Laval Steam Turbine Company now has available a bulletin describing their new De Laval A313A IMO rotary pump, mentioned in the June issue of Pacific Marine Review.

The bulletin contains a cross-section drawing, description of the IMO pumping principle, viscosity tables, dimension drawings and table of standard NEMA motor frame sizes.

Westinghouse Realigns Electronics Sales

The Electronics and X-Ray Division of Westinghouse Electric Corporation announces the realignment of its sales organization by the formation of a new field sales department. The new field sales department will be staffed by specialists at division headquarters and at field offices throughout the country.

Newly appointed manager of field electronic sales is F. W. Fischer, who became associated with Westinghouse as technical supervisor at radio stations WOWO-WGL in Fort Wayne, Indiana. In 1940 he was transferred to the Company's electronics engineering department, later becoming supervisor of the headquarters sale of communications products. It is from this position that he comes to his new assignment.

Ed. S. Winlund

William U. Dent, electronics engineer, has been appointed Far Western electronics sales representative, with headquarters at 410 Bush St., San Francisco. He will have charge of the sale of marine radar, railroad and broadcasting radio, industrial radio frequency heating generators and other electronics equipment throughout an area comprising California, Southern Idaho, Nevada, Utah, Arizona and Hawaii.

Dent joined the U. S. Naval Research Laboratories at Anacostia, D. C., in 1927, as a junior physicist. In 1929 he joined the Westinghouse Radio Division as a radio design engineer, and in January 1945 he was transferred to Los Angeles as electronics representative.

Ed. S. Winlund, electronics engineer, has been appointed electronics sales representative for the Pacific Northwest, with headquarters at the corporation's Seattle offices, 3451 E. Marginal Way. His territory will cover Oregon, Washington, northern Idaho and Montana.

Winlund entered the electronics field, first in Schenectady, N. Y., then in Camden, N. J., specializing for the past six years in industrial radio-frequency heating. Transferred to Los Angeles in 1945 and to Seattle two years ago, he joined Westinghouse early this year.

William U. Dent

Stockmann President Of Arnessen Electric

Erling B. Stockmann, until recently associated with Consolidated Edison Company, was appointed president of the Arnessen Electric Company, Inc., New York, on June 1, 1950.

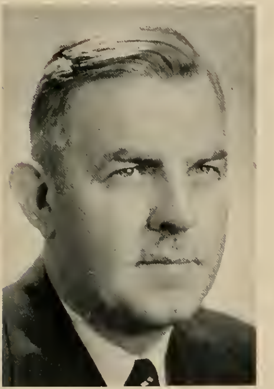
Davis To Costello

Davis Engineering Corporation has named J. M. Costello Supply Company of Wilmington, Calif., as Southern California representatives in the marine field.

Lamport Elected Association Pres.

Col. Warren D. Lamport, General Manager of the Port of Seattle, was elected to the presidency of the Northwest Marine Terminal Association at the organization's 1950 annual meeting in Longview, Washington.

Lamport is well qualified to fill the post by his wide and continuing participation in seaport activities. Some of the offices he has held are: member of the board of Harbor Commissioners of Long Beach, California; President, California Association of Port Authorities; Vice President, Northwest Marine Terminal Association; Executive member, Western Transportation Conference; Secretary - Treasurer, Pacific Coast Association of Port Authorities; and President, Army Transportation Association and National Defense Transportation Association.



Col. W. D. Lamport

At present, Lamport is a director of the American Association of Port Authorities and Commanding Officer of the 371st Major Port Overseas, Transportation Corps, Reserve.

New Nickel Alloy

The new technical bulletins on the properties of high nickel alloys have been issued by The International Nickel Company, Inc. Both are twenty-four pages in length and contain charts, tables on compositions and properties, working instructions, and other information of a technical nature.

While each of the bulletins represents, to some extent, revisions of earlier bulletins on the same subjects, the revisions have been so complete and the new data contained so extensive that they are essentially new presentations.

Technical Bulletin T-7, one of the two, is entitled, "Engineering Properties of Inconel". In addition to information on Inconel, it contains material on Inconel "X", one of the newer age-hardenable Inco nickel alloys.

The second publication is Technical Bulletin T-9 and deals with the engineering properties of "K" Monel and "KR" Monel. Both are available without charge through the Technical Editor of The International Nickel Company, Inc., 67 Wall Street, New York 5, New York.

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Capt. Wirth Promoted

Captain Theodore R. Wirth has been promoted to the office of Chief of Staff, Twelfth Naval District. The promotion was effective July 1. Captain Wirth has been serving as District Public Information Officer of the Twelfth Naval District since 1947.

Born in Connecticut, Captain Wirth attended St. Johns Military Academy in Wisconsin and the University of Minnesota before his appointment to the U. S. Naval Academy in 1917. He graduated from there in June 1921, and was then stationed aboard the USS *Texas* until 1925. In 1924 he was promoted to Lieutenant (junior grade). After serving aboard the USS *Bruce* from 1925 to 1927, he returned to the USS *Texas* for another year's service in that vessel before being odered to Recruiting duty in Minneapolis, Minnesota, at which time he was promoted to Lieutenant. Detached in 1930, he reported to the USS *Panay* for duty, and in 1932 to the Navy Yard, Cavite, P. I. Ordered to shore duty at Newport, Rhode Island in 1933, he completed the Naval War College course there in 1934 and was subsequently ordered to duty at Charleston, South Carolina, for approximately one year. Captain Wirth then reported to the USS *Ontario* for duty from 1935 to 1936, and upon commissioning of the USS *Smith* reported for duty as Executive Officer aboard that vessel in 1936. His promotion to Lieutenant Commander was effected while in the *Smith* (1937). Shore duty at the Naval Academy followed from 1938 to 1940, upon the completion of which he reported to the USS *Portland*. He was promoted to the grade of Commander in 1941.

While aboard the *Portland*, Captain Wirth participated in actions in the Coral Sea, at Midway, landings at Guadalcanal on August 7, 1941, in the eastern Solomons on August 23-25, 1942, at Santa Cruz on October 26, 1942 and again at Guadalcanal on Nov. 13-15, 1942. The remainder of his World War II service was served ashore at the U. S. Naval Academy where he was officer in charge of Buildings and Grounds and Administrative Aide to the Superintendent of the Naval Academy. In 1946 he was ordered to duty as Commanding Officer of the heavy cruiser *Fall River*. Upon decommissioning of that vessel in July 1947, he was ordered to the Twelfth Naval District. Captain Wirth's temporary promotion to the grade of Captain was effected June 2, 1942; he was permanently commissioned in that rank in October 1947 retroactive to June 2, 1942.

Captain Theodore R. Wirth

Matson Arranging Helicopter Service to Ships in L. A. Harbor

The Board of Harbor Commissioners of Los Angeles has approved an application for a helicopter operation from air, railroad and highway carriers direct to shipside at the new Matson passenger-cargo marine terminal, Berths 195-198, Wilmington.

Present plans are for a "Heliport" site 100 by 200 feet in the parking area directly behind the main cargo-passenger shed, fronting Cerritos Channel. Helicopter service direct to shipside will further develop Los Angeles Harbor services and facilitate ship transportation.

Application for Membership in the Diesel Engineers International Assn.
576 Newark Ave., Jersey City, N. J.
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Boilers in Largest Ferries

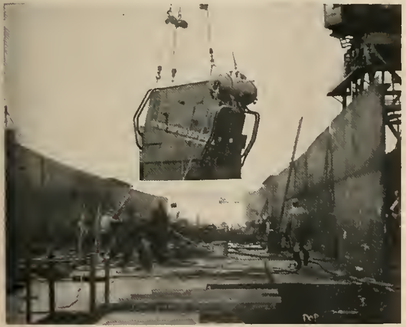
Babcock & Wilcox boilers are being installed in the new Manhattan-Staten Island ferries. The three ferries now being built in the Staten Island yards of Bethlehem Steel Company will be the largest and fastest ever to operate in the New York area and each will be equipped with three separate boilers designed to generate 28,000 pounds of steam per hour. It will be possible to operate the ferries on only two of the three boilers.

The boilers were built at the Barberton, Ohio, plant of The Babcock & Wilcox Company, and the tubes, which comprise a large part of the interior construction of the boilers, were supplied by The Babcock & Wilcox Tube Company of Beaver Falls, Pa. The unassembled units are shipped by truck and rail to a New Jersey terminal, floated down the North River to the shipyard and assembled at the head of the ways where the ships are being built. The boilers and other major items of machinery are installed before the hull and decks of the ship are built up.

Each boiler, equipped with two oil burners, will be of the most modern design, incorporating side water walls and a convection type superheater. Each will operate at a pressure of 300 pounds per square inch at a temperature of 660°F at superheater outlet at designed rating.

The ferryboats will be radar-equipped and are expected to make 18 knots. They will have an over-all length of 290 feet, which is 23 feet longer than any now in use, and a beam of 69 feet, as compared to the present 66-foot beam. They will have a draft of 13 feet and a displacement of 2,350 tons. Each will carry 3,000 passengers, compared to the present capacity of 2,230, and can handle 38, instead of the present 25 vehicles on three gangways.

Pre-assembled boiler built by The Babcock & Wilcox Company being lowered into hull of first of the three new Manhattan-Staten Island ferries at the Staten Island yards of the Bethlehem Steel Company.



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Changes in Navy Yard Commands

Capt. A. L. Becker, USN

Capt. Becker to S. F. Naval Shipyard

Captain Alvin L. Becker, USN, assumed command of the San Francisco Naval Shipyard on June 16, succeeding Captain Bernard E. Manseau, USN, who has now assumed command of the Mare Island Naval Shipyard at Vallejo, Calif.

Before taking his present command, Captain Becker was Assistant to the Chief of the Bureau of Ships, in charge of the Electronics Division. He has worked constantly in the field of radio and electronics since graduation from the Naval Academy at Annapolis in 1922.

His first duty was aboard the battleship USS *Texas* as assistant radio officer, in the then comparatively new field of communications.

Captain Becker has also served as Officer-in-charge of Shore Station Radios in BuShips, Executive Officer of the cruiser USS *Augusta*, Radio Materiel Officer at Pearl Harbor during the war, and Radio Planning Officer for the wartime building of Naval Radio Guam. He was awarded the Bronze Star for his work on the Guam project. In the last year of the war, he was Radio Planning Officer for Pacific Fleet Service Forces.

From June, 1945, until February, 1948, Captain Becker was Electronics Officer at Mare Island Naval Shipyard, serving also as Twelfth Naval District Electronics Officer and as a member of the San Francisco Chamber of Commerce Electronics Committee. He served in the BuShips duty until coming to San Francisco.

Capt. Manseau to Mare Island

Captain Manseau also graduated from the Naval Academy in 1922. He then served two years as a line officer in the battleship USS *Idaho*, before transferring to the Construction Corps. He took three years of post-graduate work, two of which were spent at Massachusetts Institute of Technology. He then went to the New York Navy Yard, and from there to the Naval Academy where he taught for two years. He next served as Assistant Repair Officer for two years on the destroyer tender, USS *Dobbin,* then went to Puget Sound Navy Yard, serving for three years as one of the New Construction Planning Superintendents. At Pearl Harbor, his next duty, he served for four and a half years as Hull Superintendent and was on duty there when Pearl Harbor was attacked. In May 1942, he was ordered to duty at the Bureau of Ships to direct ship salvage, and during the war he, with Commodore Sullivan, supervised all ship salvage for the Navy and for the United States, serving on temporary duty in North Africa, Normandy, and the Philippines, in connection with the administration of overseas salvage work. While with the Bureau of Ships supervising salvage, he supervised the contract of Merritt, Chapman, & Scott. The firm's biggest job, with which Captain Manseau was directly concerned, was the salvage of the *Normandie.* He served as Salvage Officer during the atom bomb tests at Bikini, and then for two years as Production Officer at Mare Island Naval Shipyard. In March 1949 he assumed command of the San Francisco Naval Shipyard.

Capt. B. E. Manseau, USN

Captain Manseau was awarded the Legion of Merit for services in connection with ship salvage prior to Bikini; a Gold Star in lieu of a second Legion of Merit for his work at Bikini; a Letter of Commendation from the late Secretary of the Navy Frank Knox for services during the attack on Pearl Harbor on December 7, 1941. He has also been awarded various medals and ribbons incident to duty in the various theaters of operation during both wars.

Federated Offers Booklet on Herculoy Bronzes

A new pamphlet on Herculoy for general purposes and gear bronzes has just been released by Federated Metals Division, American Smelting and Refining Company.

Herculoy Engineered Bronzes are copper-silicon alloys having many of the characteristics of high tin bronzes, yet they are completely free of tin. They offer unusually good casting and machining properties. Suggestions for typical applications are enumerated in the bulletin. Superiority to high-tin bronzes in tensile strength and service life, to carbon steels in corrosion resistance and machine ability, are set forth. There are also tabulations of physical properties for the two types of copper-silicon alloys.

Write Federated Metals Division, American Smelting and Refining Company, 120 Broadway, New York 5, New York, for 4-page pamphlet, "Herculoy Engineered Bronzes."

Sudden & Christenson Announce New Barber Sailings

Sudden & Christenson, Inc., Pacific Coast Agent for Barber Steamship Lines, Inc., announce that the westbound service of the Barber Line from Atlantic and Pacific Coast ports to the Far East has been increased to three sailings per month instead of two.

Barber Line is a joint operation of Wilh Wilhelmsen, Fearnley & Eger, Inc. and A. F. Klaveness & Co. A/S. The increase in sailing frequency denotes the completion of the postwar building program of these Norwegian owners. The service will utilize fifteen new motorships.

On the Atlantic Coast the Barber Line loads at Baltimore, New York, Newport News and Charleston and on the Pacific Coast at Los Angeles and/or San Francisco, sailing thence directly to Manila. Regular ports of call in the Far East are Manila, Cebu and Hongkong with other ports added as required.

The vessels, which are of the most modern type, provide space for ventilated and refrigerated cargo, deep tanks for bulk oils and have attractive accommodations for up to twelve passengers. Detailed schedules covering the increased service are in preparation and will be issued shortly.

Cranston Assistant V-P Of Bank of California

Elliott McAllister, president of The Bank of California, N. A., announces the appointment of Victor T. Cranston as Assistant Vice President of the Bank effective July 1. Cranston is a native of Woodland, California, and was graduated from the University of California with the class of 1924.

He was associated with R. H. Moulton & Company from 1928 through 1941. Since that time he has been with Weeden & Company in San Francisco.

Victor T. Cranston, Assistant Vice President,
The Bank of California, N. A.,
San Francisco.

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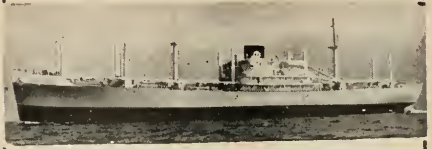

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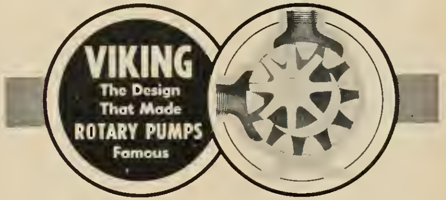

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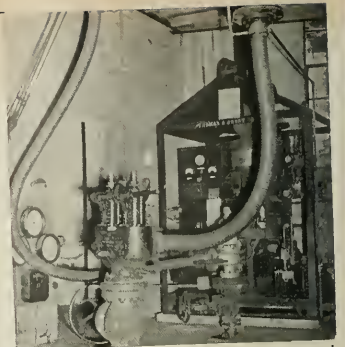

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Roberton & Schwartz Merge

San Francisco added a new firm to its list in May of this year, at Pier 62 (located at Third and Channel Streets) under the name of Roberton and Schwartz, Inc.

George E. Roberton, President, has been with Welin Davit and Boat for the past eight years serving as Field Engineer and Sales Manager for the Pacific Coast Territory. On April 1, he became Agent for Welin covering the Pacific Coast, Alaska and Islands in the Pacific Ocean, and will continue to render the same service as in the past.

William H. Schwartz, Vice President and Treasurer, was Assistant Chief Hull Draftsman with Bethlehem Steel Company-Shipbuilding Division in San Francisco for five years. Leaving Bethlehem he became Design Engineer for Alvin R. Campbell Company for 3½ years. He left there to open his own shop on Jerrold Ave., designing and manufacturing marine and industrial material handling equipment.

The firm will act as agents for Welin Davit and Boat. A well kept stock of spare parts is being maintained in San Francisco as well as a balanced stock of lifeboats, davits and winches for immediate delivery.

Roberton and Schwartz, Inc. are in a position to render special marine and industrial designing for numerous items. The shop is capable of handling special orders where quick delivery is essential. Among the diversified list of items manufactured for special orders recently were rigging blocks, gangway platforms and gangway ladders, stevedoring equipment, pallett racks, hydraulic clamps, hatch rollers, safety devices such as wire rope stoppers and preventor blocks. General welding is also done.

George E. Roberton and William H. Schwartz

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James L. Hall

So it is not surprising to find the marine representative for Gladding McBean & Company writing a paper on refractories. This is what Gladding McBean's James L. Hall is preparing for presentation before the American Ceramics Society. Refractories have an important place in the marine field so the paper will have a lasting interest to the industry.

Hall was born in Denver and graduated from the University of Denver and the Massachusetts Institute of Technology where he did graduate work in ceramics. He is a member of the American Ceramics Society, American Foundrymen's Society, and the Society of Port Engineers.

American-owned shipping is vital. For instance, 100% of the coffee we drink must come to us by sea.

Industrial Advertisers Pres.

Recently elected President of the National Industrial Advertisers Association, Bennett S. Chapple, Jr., is Assistant Vice President, Sales, United States Steel Corporation. The election took place at the annual convention of the association held at the Biltmore Hotel in Los Angeles.

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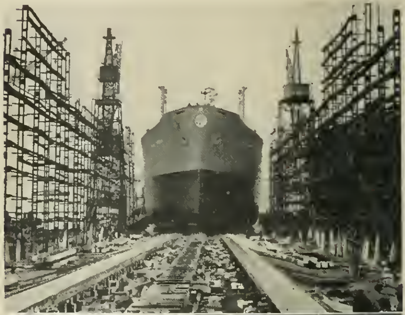
Olympic Thunder Going Down the Ways

When the Bethlehem-Sparrows Point Shipyard recently launched the S.S. "Olympic Thunder," the last of five super tankers for the Olympic Oil Lines, the sponsor was Mrs. D. D. Strohmeier, wife of the Vice-President of Bethlehem's Shipbuilding Division. She is shown below on the launching stand with left to right, J. M. Willis, Baltimore District General Manager of Bethlehem's Shipbuilding Division; Miss Martha Macy Hill, of Norfolk, Va., granddaughter of Mr. and Mrs. Willis; Mrs. Willis; and A. S. Onassis, representing the owner.

The "Olympic Thunder" was ninth of 14 super tankers under construction or on order at the Sparrows Point Yard. These vessels each have a deadweight of 28,000 tons and liquid cargo capacity of about 240,000 barrels or 10,100,000 gallons. They are 624 feet, 7½ inches long, 84 feet wide and have a depth of 44 feet. The speed is approximately 17 knots.



Port of Long Beach Plans New Cotton Storage Shed

To meet the demands of cotton shippers, the Port of Long Beach is rushing plans for a new cotton storage shed to be constructed to the rear of Berth 5, Pier A, Outer Harbor with a covered storage capacity of 12,000 bales. This new shed, with 46,000 square feet of space, will cost an estimated $138,000.00 and will be completed before the rainy season commences.

Sperry Radar-Loran-Gyro Compass Schools

The following is a schedule of classes in Radar, Gyro Compass and Loran Operation for the remainder of 1950 and the year 1951, held at 525 Eighth Street, San Francisco.

The purpose of these courses is to acquaint shipboard personnel with the operation, maintenance and theory of these equipments. A Special Certificate is issued for each different course completed. There is no charge for any of this schooling.

In the past, service records indicate higher efficiency, fewer malfunctions and reduction in maintenance costs where equipment is in charge of Sperry trained men.

Courses may be started on the following dates:

GYRO (Two Weeks)	LORAN (One Week)	RADAR (One Week)
July 24	Aug. 7	July 17
Aug. 21	Sept. 5	Aug. 14
Sept. 18	Oct. 2	Sept. 11
Oct. 16	Oct. 30	Oct. 9
Nov. 13	Nov. 27	Nov. 6
Dec. 11	Dec. 26	Dec .4
Jan. 8, 1951	Jan. 22, 1951	Jan. 2, 1951
Feb. 5	Feb. 19	Jan. 29
March 5	March 19	Feb. 26
April 2	April 16	March 26
April 30	May 14	April 23
May 28	June 11	May 21
June 25	July 9	June 18
July 23	Aug. 6	July 16
Aug. 20	Sept. 4	Aug. 13
Sept. 17	Oct. 1	Sept. 10
Oct. 15	Oct. 29	Oct. 8
Nov. 12	Nov. 26	Nov. 5
Dec. 10	Dec. 24	Dec. 3
		Dec. 31

If further information is desired, contact L. Bodian, Instructor, MArket 1-3262.

Big Hamilton Diesel

Lima-Hamilton Corporation announces an order for an 8-cylinder Hamilton marine diesel for Pittsburgh Steamship Company for installation in the ship, *Eugene W. Pargny,* with a rating of 3,570 brake horsepower, 252 revolutions per minute, geared down to 110. Delivery will be made in time for installation when the ship is laid up for the winter.

New Refrigeration Service

William F. Donnelly and Kenneth Zappettini announce the formation of a marine refrigeration sales and service company known as Donnelly and Zappettini, at 11 Steuart St., San Francisco. The firm, in business since May 5, are representatives for Chrysler Airtemp and Frick refrigerating units, and maintain a general stock of Henry and Alco valves, and Ranco and Detroit Lubricator controls. The firm is equipped to handle all phases of marine refrigeration work. Associated with the company are Albert Nunns, foreman, Oliver Peters, and Harold Wrigley, Jr. (Harold Wrigley, Sr. is with International Paint Company.)

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A new type of disc file has been developed by Kennametal Inc., Latrobe, Pa., which provides for faster, less costly operations on non-ferrous metals and plastics commonly performed by grinding, such as snagging castings, cutting off flashing, facing and squaring up surfaces, etc. The expense involved in frequent replacement of abrasive wheels is eliminated.

Triangular prisms of strong, hard Kennametal (90.0 Rockwell A) are copper-brazed to the face of a steel back-up plate, in a number of courses, to form a multiplicity of sharp, sturdy cutting edges. They are so shaped, grouped, and positioned as to provide a 30° negative axial rake, a 30° clearance angle, and 10° negative radial rake. This construction affords the most efficient and free-cutting action. Material is removed is sizable chips—no abrasive dust. A remarkably smooth, true surface is produced. Eccentricity of the intermediate courses of prisms assures uniform cutting action across the face of a workpiece. When the file is run at proper speed, workpieces remain cooler than with abrasive wheels because chips dissipate the heat of cutting.

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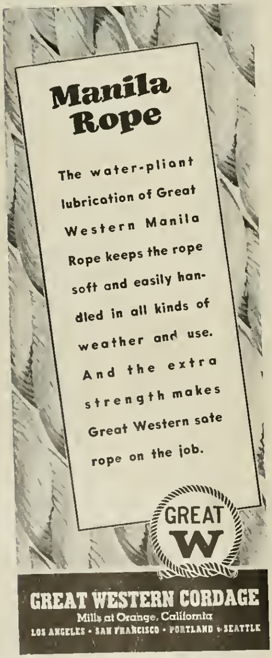
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De Laval Moves Offices To Poughkeepsie

George C. Stoddard, President of The De Laval Separator Company, has revealed that plans have been completed to move the De Laval executive staff and general office from New York City to Poughkeepsie, N. Y. Construction has been started on a new, attractive and ultramodern De Laval general office building which will be located a short distance from the De Laval factory. A small executive and financial office with sales conference rooms will be maintained in New York, probably in the midtown area.

World Port Conditions

(Continued from page 69)

Delay and Congestion—Seven days delay in consignees taking delivery due to poor stacking of cargo and consignees using docks for storage. No congestion.

Pilferage and Damage—Complaints made on heavy damages to flat and corrugated asbestos due to inadequate packing. Pilferage and damage claims otherwise decreasing.

Slowly but steadily, port conditions throughout the world have been improving from the total state of physical and economic exhaustion occurring during and as a result of the war, and the conditions today could be said to be much better than those that existed in the years 1946-1947. Although improvements have been shown in the year 1949 and still more improvement will be shown in the year 1950, there is still much to be accomplished before we attain the conditions which existed in pre-war periods.

We all realize that the adequacy of our export packing as a whole can make or break our reputation among foreign buyers. The foreign export fraternity in this country has been taking constructive steps. Recently the Packaging Committee of the Maritime Association of the Port of New York, which is a committee consisting of representatives of shippers, carriers, and underwriters, reported on a study which included observations on outbound cargoes for twenty different steamship vessels, of nineteen different companies, plying eleven trade routes to all parts of the world. The report of observations made by this committee on the outturns on the same ships, together with comprehensive reports from thousands of consignees, have been quite revealing. It was found that poorly packed shipments included every type of container and practically every American product commonly exported. While many poorly packed shipments were found, there were also many that were well packed. Some groups of commodities showed a higher incidence of poor packing than others. Significantly, this study showed a parallel between the "claims paid" experience for damages occurred as revealed by underwriters, and the "poor packing" reports of the Committee.

A review of underwriters "claims paid" figures will therefore reveal where the present difficulties are being encountered, and where export packing and shipping can do their bit to better the entire picture. An analysis of my own company's "paid claim" figures revealed that major casualties, such as sinkings, strandings, fires, and collisions, which are largely "non-preventable" for a ten year period from 1928 to 1937 were 47% of all losses paid, whereas for the three year period from 1946 to 1948 the same causes of loss were only 26% of all losses paid. For the same periods, theft, pilferage and non-delivery accounted for an increase of from 8% to 33% and handling and stowage damages accounted for an increase of from 20% to 28%. Truly these latter figures are amazing.

The total *preventable* losses increased from 53% to 74% with only one type group of losses—fresh water and sweat damages—showing a decrease from 14% to 8%. It is therefore apparent that our attention must be directed to protection against theft, pilferage, non-delivery, and handling damage.

As export packers, shippers, carriers, and underwriters, we must view these preventable losses as our target for prevention. It is from the possibilities of damage arising from foreign port conditions and other shipping factors, that we must protect our shipments. It should be borne in mind that improvement to export packs does not necessarily mean an increase in packing costs. In many cases actual *savings* in costs can be realized. Often in the past I have viewed on piers, shipments which, if properly packed, could have reduced cubic measurement and consequent freight charges, damages or losses, and ultimately insurance charges.

Foreign port conditions and many of our export packing factors are generally not within our control. We can, however, review our export packing and material handling techniques in order to effect all possible saving, improve the chances for our merchandise to arrive safely at destination, and at the same time better our competitive position abroad.

We underwriters are prepared to offer our assistance in any way that it can be used.

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Catalog on Mechanical and Hydraulic Jacks

Application information on all sizes and types of Mechanical and Hydraulic Jacks are included in a new letter-file size catalog, carrying details of the 123 models of ratchet lowering, hydraulic and screw type jacks that comprise the standard Simplex line.

The jacks are grouped by type, with a liberal use of photographs and drawings.

Copies of the catalog (No. 50) are available on request from Templeton, Kenly and Company, 1020 South Central Avenue, Chicago 44, Illinois.

Bulletin on Mechanical Tubing Economies

A new bulletin on mechanical tubing is announced by The Babcock & Wilcox Tube Company. It describes ways in which increased production, lower manufacturing costs and short cuts to improved design may be reached by taking advantage of an unusual service embracing the complete range of steel tubing available to industry. This includes seamless, as well as welded, tubing, hot-finished or hot-rolled, cold-drawn or cold-rolled, in carbon, alloy and stainless steel grades, in various finishes, and heat treated for optimum ease of machining, joining and forming operations. The bulletin also shows how purchasing problems may be simplified.

Bulletin TB-324 is available on request to The Babcock & Wilcox Tube Company, Beaver Falls, Pa.

Corrosion-Resistant Alloy Valves

The first all-stainless, completely jacketed valve, manufactured by Alloy Steel Products Company, is fully described in a new bulletin being distributed by The Republic Supply Company of California. Also available in technical bulletin form is information covering numerous corrosion-resistant alloys, adaptable in the selection of valves and fittings for corrosive solutions, together with full data relative to the handling of sulphuric acid at various concentrations and temperatures. The valve application data section will prove a useful guide in selecting proper alloys for specific applications. Copies of new bulletins and complete catalog may be had by writing The Republic Supply Company of California, Box 2137, Terminal Annex, Los Angeles 54, California.

Johns-Manville Clipper Seal

The 16-page brochure, "Johns-Manville CLIPPER SEAL", gives useful data for anyone needing information on oil seals. Photographs show where to use Clipper Seals and how to install them. Drawings illustrate how the lip and heel construction of these non-metallic oil seals can be varied. The text gives other pertinent information of importance to designers, engineers, and maintenance men. The booklet is divided into sections on the principle of Clipper Seals, their construction, advantages in various applications, installation data, and other information of interest to oil seal users.

Free copies of this publication are now available from Johns-Manville, 22 East 40 Street, New York 16, New York.

Rotary Pumps

A new 6-page, 2-color bulletin, "FACTS," by Blackmer Pump Company, Grand Rapids, Michigan, illustrates design, construction, maintenance, operation and application of rotary pumps. Details of sliding vanes and swinging vanes with selection table for specifying and other data of interest to engineers, maintenance men and plant operators are included. Copies are available on request.

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Wright Safeway Literature Available

The Wright Hoist Division of American Chain & Cable Company, Incorporated of York, Pennsylvania has released a new folder, DH-164, which describes their new line of Wright Safeway hand hoists.

The attractive red, gray and black, six page folder introduces the Safeway line. New, compact, efficient hoists are available in capacities from ½ ton to 4 tons. The booklet includes such information as the complete specifications, action photographs, a cross sectional view of the hoist, graphic illustrations of the hoist and a listing of its features.

Copies of the folder may be obtained by writing directly to the Wright Hoist Division of American Chain & Cable Company, Inc., York, Pennsylvania.

New Nordberg Bulletin

Publication of a 16-page, two-color bulletin (No. 176) on Nordberg Type FSM-16 four-cycle, direct reversing, 16″ marine Diesel engines is announced by Nordberg Manufacturing Company, Milwaukee 7, Wisconsin. Built in six, seven and eight-cylinder sizes of 16″ bore and 22″ stroke, the FSM-16 is of the trunk piston, mechanical injection type. It is designed for non-supercharged or supercharged operation.

These engines are supplied for direct or reduction gear drive or electric propulsion in single or multi-unit installations.

Bulletin 176 illustrates with photographs and machinery arrangement drawings some typical successful installations.

Navigational Equipment Catalog

Wilfrid O. White & Sons, Inc., (formerly Kelvin-White Company), of Boston, Mass., announces the publication of a new 48-page catalog of their complete line of compasses and other navigational instruments, including the company's newest products, the Surecho 60-fathom depth sounder, and the Tracker radio direction finder.

Pamphlet on Chemical Fire Hazards

The increasing amounts and kinds of chemicals finding their way into ships' cargoes has prompted the Accident Prevention Bureau of the Pacific Maritime Association to prepare or reprint a set of tables relating to the hazards involved in the handling of chemicals, and the Bureau will no doubt be pleased to mail copies to those who have not already received them. The Bulletin is the Bureau's No. 34, June of 1950.

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Pacific MARINE REVIEW

AUGUST, 1950

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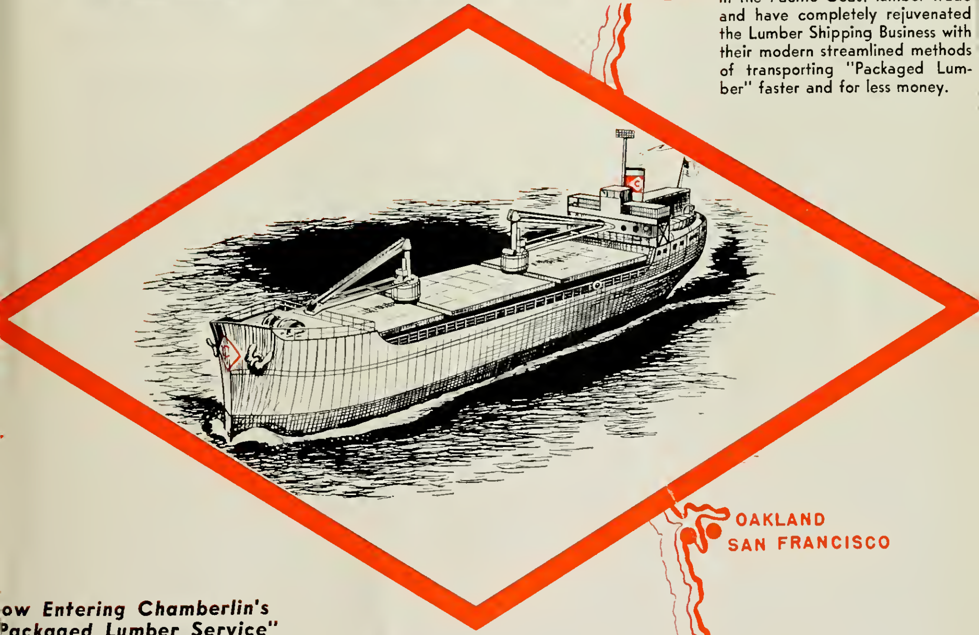

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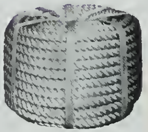

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Pacific MARINE REVIEW

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Pacific MARINE REVIEW

There is No Substitute For Ships

THERE are those who figured that the next war would be strictly in the air, and that ships—both Naval and Merchant Marine—could rot away. Look at the Berlin Air Lift, they said. Or again, Long Range Planes won't need Carriers. Or, Troops, if any, will be air-borne. That type of thinking is now in the past, and probably will not be revived for a generation. Vital air strips are terribly costly—when a few big carriers would do the business, and the anguished demand for men and tanks—a demand heard both at home and in the trenches—is not answered by 2100 vessels in lay-up, nor by carriers in moth-balls. Of the 2100 commercial ships in lay-up, 1617 are 11-knot Libertys, and of the remainder the Maritime Commission has been fighting for two years to get 429 vessels put in operating condition but with little success.

A vast array of American merchant shipping is required to transport and maintain even a single division of troops, according to a survey prepared by the American Merchant Marine Institute. It is estimated 250,000 deadweight tons of troop-carrying vessels and freighters are needed to transport one full division and its equipment across the Pacific. The undertaking calls for 12 days to pack and load 18,000 tons of supplies and 4,000 vehicles aboard the ships, and seven days to get aboard assigned transports the 19,000 men in a full division having attached units. Assembling and steaming in convoy takes another 18 days, while discharging takes another seven days.

But that is only the beginning. The division needs 133,000 measurement tons of supplies during the first month of campaign, while 19,000 measurement tons must go forward to support each day of combat.

Troops in action consume vast amounts of supplies of all types. An infantry division expends about 542 tons of ammunition in a single day. During the last war, merchant vessels carried 700,000 different items, ranging in size from locomotives to safety pins. A mechanized division takes about 18,000 gallons of gasoline for every hour on the move. Supporting aircraft are also heavy consumers of gasoline and lubricants. All this requires a steady arrival of tankers in Far East areas.

The airplane is no equal to the ship in the field of transportation. As a case in point, military authorities cite the problem of moving 100,000 tons of supplies to the Orient in a month. Here is their comparison:

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	Plus
	80 T-2 tankers to keep them fueled

Admiral Nimitz states that the 11-knot merchant marine with which we began the last war, or the 15-knot merchant marine with which we ended it, will not suffice for this one. We must have more than 20 knots. And Vice-President Barkley, at the launching of the President Jackson in June said our passenger-carrying capacity is less than 50% of 1939. Those who withhold action on the 22-knot Mariposa and Monterey will find their dilatory tactics hard to justify. And the same is true of those who continually obstruct merchant marine progress. Costs are not dollars now; they are lives.

American Ships Are Safely Built

THE February 1950 issue of "The Readers Digest" contained an article entitled, "Must Ships Be Built to Burn?" It had been written following the disastrous "Noronic" fire at Toronto, Canada.

In the maritime world there has been wide criticism of this article because it fails to make clear the basic standards of construction in American-built ships. The Noronic was not an American vessel.

The structural requirements for our ships are so high that it would be difficult to start a fire in them. The subdividing of the hull, the composition and fabrication of the walls, decks and furnishings, the fire detecting, reporting and extinguishing facilities, form such broad protection that any thought of fire at sea has practically disappeared from the minds of passengers on American ships.

There must, of course, be a distinction between ships built prior to the formulating of the present Coast Guard rules and those built or completely reconverted since. War-built vessels have to be brought within the rules, and so do such complete reconversions as that of Matson's Lurline, on which millions of dollars were spent following rule revisions in 1936 and since.

Safe ships, as far as fire is concerned, is a four-way proposition: fire prevention, fire detection, fire confinement, and fire extinguishment.

Fire prevention is built into the structure, and in providing the best, cost is no deterrent.

If a fire occurs on a ship at sea, or in port, especially if accompanied by loss of life, it is sure to incite public emotions. When an American citizen happens to be aboard such a vessel, even though the ship itself may be of foreign flag, the impression is too often easily gained that a disastrous situation has been allowed to develop without the correlative development of corrective or preventive action. Because dramatic events attract and hold attention, and humdrum facts (however important) do not, modern shipbuilding techniques and safety regulations often go unnoticed. Accordingly, therefore, it seems appropriate to show how and why "American ships are *not* built to burn."

Following the *Morro Castle* in 1934, much legislation was introduced on the subject of preventing and controlling fires on American passenger vessels, and the portion finally adopted was applicable to new construction undertaken under the provisions of the Merchant Marine Act of 1936.

One of the first ships to be built with these improved fire-retardent standards was the *America*, and following

The "Lurline" after completion of reconversion in 1948. This ship is the last word in safety at sea.

Typical deluxe stateroom with Johns-Manville Marinite lining over bulkheads and Johns-Manville Marine Sheathing deckhead.

the war the principles of all the earlier recommendations were incorporated into fire control standards for the American Merchant Marine. Determining the standards to be met and enforcing compliance with these standards, is a function vested in the United States Coast Guard.

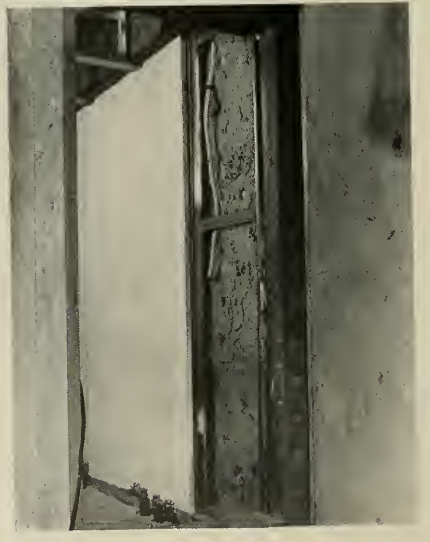
Perhaps the greatest single achievement in the gradual advancement of the fire protection of modern passenger vessels has been the adaptability of incombustible materials, *other than steel,* for use in ship construction. The materials in mind include block glass, cement, gypsum, magnesite, asbestos, diatomaceous silica, plastic compositions, mineral wool, hollow steel panels filled with insulation, etc. They are used for many purposes, such as deck coverings, bulkhead panels, structural insulation, sheathing, furniture and furnishings, etc. Because of the incombustibility of these materials, and the comparative ease with which they can be moulded into pleasing architectural designs, passenger vessels can now be, and, in fact, are, constructed, altered and converted so as to be navigated with safety to those on board with the minimum of hazard from fire.

This is accomplished by dividing the ship into main vertical zones, each of which, in turn, is further subdivided into "safety zones." Regulations require that the hull and superstructure be divided into main zones, not exceeding 131 feet in length. Each zone is in itself a completely fire-resistant unit, independent of any other zone, with the necessary apparatus within its own boundaries for the detection and extinguishment of any fire which might originate therein. The size of each such zone is based on extensive experimentation which has determined it to be the most practical for isolating and fighting a fire with the maximum efficiency and the minimum disturbance to the ship as a whole. The "safety zones" generally coincide in area with the spaces designated as the "Promenade" and Alphabetical ("A", "B", etc.) Decks on large liners. On a vessel of the *President Cleveland* class, for example, there are five main vertical zones, subdivided into 25 smaller safety zones. By this method of subdivision zoning, better protection is afforded, since it permits greater application of safety principles, such as the use of incombustible materials, etc., in proportion to the degree of protection needed or desired in a specific zone because of the use to which it is to be put. For instance, staterooms, stairways, lounges, storerooms, service spaces, machinery spaces, cargo spaces, etc., require fire protection in varying degree for obvious reasons.

All bulkheads and decks comprising any of the fire zones are classed as A-60, A-30, A-15, A-O, B-15, B-O, or C, depending on the character of activity carried on in the space on each side of the bulkhead, or above and below the deck. Thus bulkheads on decks of the "A" class can be subjected to a fire of 1500 degrees F., and be capable of preventing the passage of flame through the bulkhead, *for an hour;* moreover, when fitted with approved structural insulation, the average temperature on the unexposed side would not rise more than 250 degrees F., within the time limit set by the numerical designator behind the class letter. For example, Class A-60 would mean that there would be no passage of flame for one hour, and the temperature would not rise more than 250 degrees F. above the original temperature for 60 minutes. For A-30, the temperature would not rise more than 250 degrees F. for 30 minutes; for A-15, for 15 minutes; for A-O (no insulation), flame would not pass, but the temperature would rise immediately. Class B bulkheads and decks withstand the passage of flame for one-half hour. Class C structures meet no requirements relative to the passage of flame, nor the limiting of temperature rise.

The safety regulations designate various classes of Material to be used for various spaces, in accordance with the amount of protection deemed to be required. For example, staterooms with incombustible furnishings, veneers, drapes, etc., adjacent to stairways, would require A-O material; whereas, the same stateroom with combustible furniture and furnishings would need A-60 material. A stateroom containing incombustible furniture is one in which such things as waste paper baskets, desks, wardrobes, dressing tables, chairs, sofas, etc., are constructed of fire-proof materials, with a 10% allowance for combustible veneers, upholstery, drapes, rugs, trim, decorations, etc.

Type A Bulkhead. Mineral Wool Blanket shown attached to steel bulkhead with Marinite secured to metal channels over insulating blanket.



Note metal stair railing. Combustible materials even in such places as this, are taboo.

Where practicable, all ventilation systems are designed so that all ducts leading to the various inclosures are kept within the main vertical zones. This is to preclude any possibility of fire from one zone spilling over into another zone through its ventilation system. However, when, of necessity, ducts pass through the main bulkheads, automatic (fusible link) fire dampers are installed. As an added precaution, a master stop switch is located in the pilot house to shut down the ventilation fans in the event of fire or other emergency.

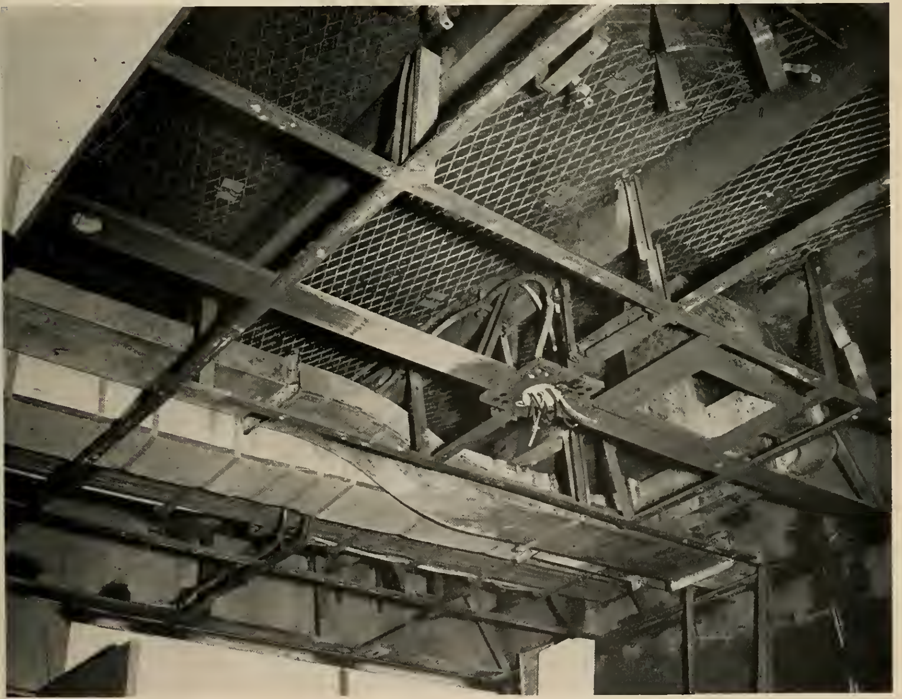
Special self-closing fire screen doors provide for entrance to or exit from any zone. These doors open in the direction of escape, and are capable of closing against a list of 3½ degrees. Doors in the main vertical zone bulkheads, which are not normally closed, such as those leading to stairways, public spaces, lounges, dining rooms, etc., where decorative doors and those of similar type are preferred, are magnet-held open, and are capable of release from the pilot house. These doors will also release and close automatically in the event of disruption to the electric power supply. On vessels of the *President Cleveland* class, previously mentioned, there are 70 of these magnet-held doors, and 130 of the manual-opening type. No hooks or other means of permanently holding the doors open are permitted, as otherwise their fire protective purpose would be defeated.

As modern hotels and other like buildings are provided with fire escapes, so, similarly, are modern passenger vessels. The only difference is that on ships, the direction of escape is *up*, whereas, in the case of hotels, the direction of escape is *down*. In each main vertical zone, it is provided that: "There shall be at least one stairway serving all accommodation and working spaces. Such stairway shall be inclosed so that escape my be made from any deck to the weather or embarkation decks without coming out of the stairway enclosure. The stringers, treads and risers of all stairways shall be of steel, or equivalent metal construction. Balustrade and trim shall be of approved incombustible materials."

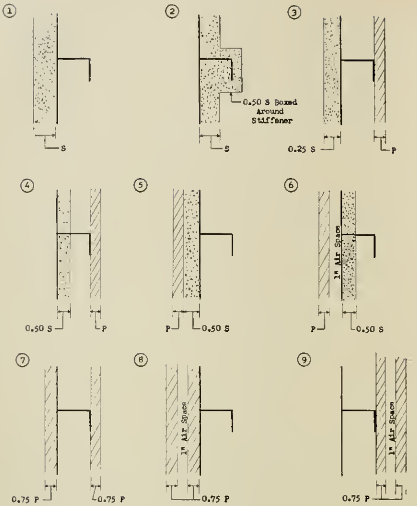
Not only are modern vessels built of fire-retardant materials, but means of detecting and minimizing the growth of any fire are also provided. Overhead, electrical detectors are located in each zone, which sound an alarm in the pilot house. Additional manual fire alarm boxes are provided in strategic locations, and a fire patrol watchman makes his rounds at periodic intervals. Portable fire extinguishers and fire hose can be brought to any point within any of the saftey zones. To insure that the condition of this equipment is such that it can be relied upon for emergencies, Coast Guard Inspectors make annual inspections thereof, and quarterly reinspections thereafter. These inspectors also witness fire drills and the training of the ship's crew in the proper use of fire equipment.

Although every effort is made on the part of the operating company, the crew and the Coast Guard to reduce to a minimum the likelihood of fire, some responsibility for the avoidance of such a catastrophe still rests with the passengers themselves, namely, avoiding careless handling of matches, cigarettes and other sources of ignition which might inadvertently start a blaze in some corner of the ship, not only to protect their own safety, but that of fellow passengers as well. An example of what should not be practiced is illustrated in a recent incident in which a passenger threw a lighted cigarette to windward from the Promenade Deck of the vessel; it blew back, found its way into an open port hole of another passenger's stateroom, where it set fire to the bedding. The room was vacant at the time, but a nearby passenger smelled smoke, and promptly went to

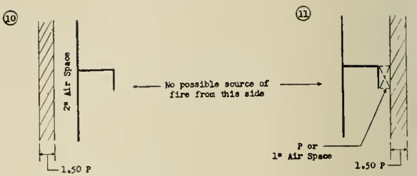
Method of furring out from deckhead to allow space for ducts - conduit - cables, etc. Marine Sheathing attached to metal furring channels shown in upper left. Marine Lining on bulkhead shown in lower foreground.



Class A-60 Bulkheads



Class A-60 Bulkheads



Bulkheads forming part of a main vertical zone bulkhead.

the nearest fire alarm station which sent a warning to the bridge. The smouldering fire was extinguished; the bedding was renewed; all traces of burned material were removed; all of this was done, unknown to the regular occupant of the stateroom.

The matter of fire detecting and extinguishing equipment for ships has received the careful attention of architects, operators and Government officials. The consideration of this equipment can be more clearly understood by dividing the ship into three parts and considering the application of detecting and extinguishing equipment to each part. These parts are Cargo Spaces, Machinery Spaces, Superstructure.

Cargo spaces are fitted with detecting equipment in the form of a smoke detecting system. The first traces of smoke present in a compartment are drawn through a

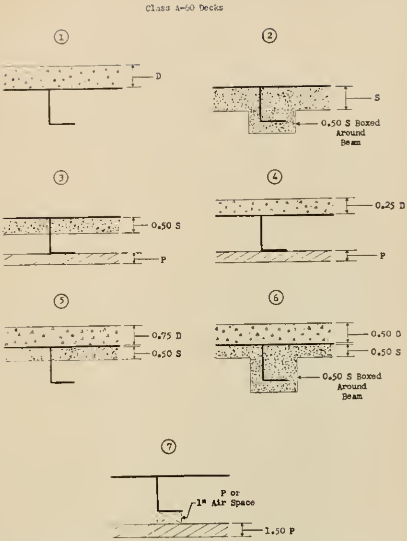
This space ⟶ Adjacent to this space ↓	Control stations	Stairways and elevator enclosures	Corridors	Lifeboat embarkation or lowering stations	Staterooms and all public spaces with incombustible furnishings, veneers, trim, drapes, rugs, etc.	Staterooms and public spaces under 500 square feet with incombustible furnishings	Public spaces from 500 square feet to 3,000 square feet with incombustible furnishings	Public spaces over 3,000 square feet with incombustible furnishings	Staterooms and public spaces under 500 square feet with combustible furnishings and isolated storerooms	Public spaces from 500 square feet to 3,000 square feet with combustible furnishings	Public spaces over 3,000 square feet with combustible furnishings	Washrooms, toilet spaces and isolated pantries with incombustible fittings	Galleys, main pantries, storerooms and workshops	Motion-picture booths and film lockers	Machinery spaces	Fuel tanks	Isolated fan rooms	Cargo spaces and cargo oil tanks	Water tanks and voids	Open decks and enclosed promenades (not safety area)
Control stations	A-60	A-30	A-30	A-0	A-30	A-60	A-60	A-60	A-60	A-60	A-60	A-0	A-60	A-60	A-60	A-60	A-15	A-60	A-0	A-0
Stairways and elevator enclosures		A-0	A-0	A-0	A-0	A-60	A-60	A-60	A-60	A-60	A-60	A-0	A-60	A-60	A-60	A-60	A-15	A-60	A-0	A-0
Corridors			A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-30	A-0	A-0	A-0	A-0	A-0	A-0
Lifeboat embarkation or lowering stations				C	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	C
Staterooms and all public spaces with incombustible furnishings, veneers, trim, drapes, rugs, etc.					A-15	A-15	A-15	A-15	A-15	A-15	A-15	A-0	A-30	A-30	A-30	A-30	A-0	A-30	A-0	A-0
Staterooms and public spaces under 500 square feet with incombustible furnishings						A-30	A-60	A-60	A-60	A-60	A-60	A-0	A-30	A-60	A-30	A-30	A-0	A-30	A-0	A-0
Public spaces from 500 square feet to 3,000 square feet with incombustible furnishings							A-60	A-60	A-60	A-60	A-60	A-0	A-60	A-60	A-60	A-60	A-0	A-60	A-0	A-0
Public spaces over 3,000 square feet with incombustible furnishings								A-60	A-60	A-60	A-60	A-0	A-60	A-60	A-60	A-60	A-0	A-60	A-0	A-0
Staterooms and public spaces under 500 square feet with combustible furnishings and isolated storerooms									A-60	A-60	A-60	A-0	A-60	A-60	A-60	A-60	A-0	A-60	A-0	A-0
Public spaces from 500 square feet to 3,000 square feet with combustible furnishings										A-60	A-60	A-0	A-60	A-60	A-60	A-60	A-0	A-60	A-0	A-0
Public spaces over 3,000 square feet with combustible furnishings											A-60	A-0	A-60	A-60	A-60	A-60	A-0	A-60	A-0	A-0
Washrooms, toilet spaces, and isolated pantries with incombustible fittings												A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0
Galleys, main pantries, storerooms and workshops													A-0	A-60	A-0	A-0	A-0	A-0	A-0	A-0
Motion picture booths and film lockers														A-60	A-60	A-60	A-30	A-60	A-0	A-0
Machinery spaces															A-0	A-0	A-0	A-0	A-0	A-0
Fuel tanks																A-0	A-0	A-0	A-0	A-0
Isolated fan rooms																	A-0	A-0	A-0	A-0
Cargo spaces and cargo oil tanks																		A-0	A-0	A-0
Water tanks and voids																			A-0	A-0
Open decks and enclosed promenades (not safety area)																				C

series of pipes to a detecting cabinet, usually installed in the wheelhouse, from which an alarm is sounded. The extinguishing for cargo compartments can be either carbon dioxide or steam. In 1946 a series of tests were conducted by the U. S. Coast Guard in the San Francisco Harbor to evaluate the merit of various extinguishing agents for cargo compartments.

Built-in systems are fitted for machinery spaces. Boiler rooms require a bilge flooding system. Machinery compartments on diesel propelled ships require a total flooding system in order to extinguish fire in the entire compartment. Carbon dioxide is generally used for these systems. Recently, on many steamships, the bilge flooding system has been replaced by a total flooding system in order to provide protection for the entire compartment.

Electrical fire detecting systems are installed in passenger vessels for the protection of the superstructure. These consist of the installation of thermostats in the various locations with an annunciator installed in the wheelhouse. A rise in temperature causes the thermostat to operate and rings an alarm in the wheelhouse and engine room. An alarm is also sounded in the quarters of the fire fighting crew. The systems are installed in storerooms, lockers, public spaces and like compartments. In general, there are two types of system available. One type is a Zone type system, which announces the fire in

(Continued on page 32)



This space above → This space below ↓	Control stations	Stairways and elevator enclosures	Corridors	Lifeboat embarkation or lowering stations	Staterooms and all public spaces with incombustible furnishings, veneers, trim, drapes, rugs, etc.	Staterooms and public spaces under 500 square feet with incombustible furnishings	Public spaces from 500 square feet to 3,000 square feet with incombustible furnishings	Public spaces over 3,000 square feet with incombustible furnishings	Staterooms and public spaces under 500 square feet with combustible furnishings and isolated storerooms	Public spaces from 500 square feet to 3,000 square feet with combustible furnishings	Public spaces over 3,000 square feet with combustible furnishings	Washrooms, toilet spaces and isolated pantries with incombustible fittings	Galleys, main pantries, storerooms and workshops	Motion-picture booths and film lockers	Machinery spaces	Fuel tanks	Isolated fan rooms	Cargo spaces and cargo oil tanks	Water tanks and voids	Open decks and enclosed promenades (not safety area)
Control stations	A-60	A-60	A-30	A-0	A-15	A-30	A-60	A-60	A-60	A-60	A-60	A-0	A-0	A-60	A-0	A-0	A-0	A-0	A-0	A-0
Stairways and elevator enclosures	A-15	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-15	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0
Corridors	A-30	A-0	A-0	A-0	A-0	A-0	A-0	A-15	A-0	A-15	A-30	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0
Lifeboat embarkation or lowering stations	A-60	A-0	A-0	C	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	C
Staterooms and all public spaces with incombustible furnishings, veneers, trim, drapes, rugs, etc	A-30	A-30	A-15	A-0	A-15	A-15	A-15	A-30	A-15	A-30	A-30	A-0	A-0	A-30	A-0	A-0	A-0	A-0	A-0	A-0
Staterooms and public spaces under 500 square feet with incombustible furnishings	A-60	A-30	A-15	A-0	A-15	A-30	A-60	A-60	A-60	A-60	A-60	A-0	A-0	A-60	A-0	A-0	A-0	A-0	A-0	A-0
Public spaces from 500 square feet to 3,000 square feet with incombustible furnishings	A-60	A-60	A-30	A-15	A-15	A-60	A-60	A-60	A-60	A-60	A-60	A-0	A-0	A-60	A-0	A-0	A-0	A-0	A-0	A-0
Public spaces over 3,000 square feet with incombustible furnishings	A-60	A-60	A-60	A-15	A-30	A-60	A-60	A-60	A-60	A-60	A-60	A-0	A-0	A-60	A-0	A-0	A-0	A-0	A-0	A-0
Staterooms and public spaces under 500 square feet with combustible furnishings and isolated storerooms	A-60	A-60	A-30	A-15	A-15	A-60	A-60	A-60	A-60	A-60	A-60	A-0	A-0	A-60	A-0	A-0	A-0	A-0	A-0	A-0
Public spaces from 500 square feet to 3,000 square feet with combustible furnishings	A-60	A-60	A-60	A-30	A-30	A-60	A-60	A-60	A-60	A-60	A-60	A-0	A-0	A-60	A-0	A-0	A-0	A-0	A-0	A-0
Public spaces over 3,000 square feet with combustible furnishings	A-60	A-60	A-60	A-30	A-30	A-60	A-60	A-60	A-60	A-60	A-60	A-0	A-0	A-60	A-0	A-0	A-0	A-0	A-0	A-0
Washrooms, toilet spaces, and isolated pantries with incombustible fittings	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0
Galleys, main pantries, storerooms and workshops	A-60	A-60	A-60	A-30	A-30	A-60	A-60	A-60	A-60	A-60	A-60	A-0	A-0	A-60	A-0	A-0	A-0	A-0	A-0	A-0
Motion picture booths and film lockers	A-60	A-60	A-60	A-60	A-30	A-60	A-60	A-60	A-60	A-60	A-60	A-0	A-60	A-60	A-60	A-60	A-60	A-60	A-0	A-0
Machinery spaces	A-60	A-60	A-60	A-30	A-30	A-60	A-60	A-60	A-60	A-60	A-60	A-0	A-0	A-60	A-0	A-0	A-0	A-0	A-0	A-0
Fuel tanks	A-60	A-60	A-60	A-30	A-30	A-60	A-60	A-60	A-60	A-60	A-60	A-0	A-0	A-60	A-0	A-0	A-0	A-0	A-0	A-0
Isolated fan rooms	A-15	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-60	A-0	A-0	A-0	A-0	A-0	A-0
Cargo spaces and cargo oil tanks	A-60	A-60	A-60	A-30	A-30	A-60	A-60	A-60	A-60	A-60	A-60	A-0	A-0	A-60	A-0	A-0	A-0	A-0	A-0	A-0
Water tanks and voids	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0
Open decks and enclosed promenades (not safety area)	A-0	A-0	A-0	C	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	C

Decks forming part of a stepped main vertical zone bulkhead.

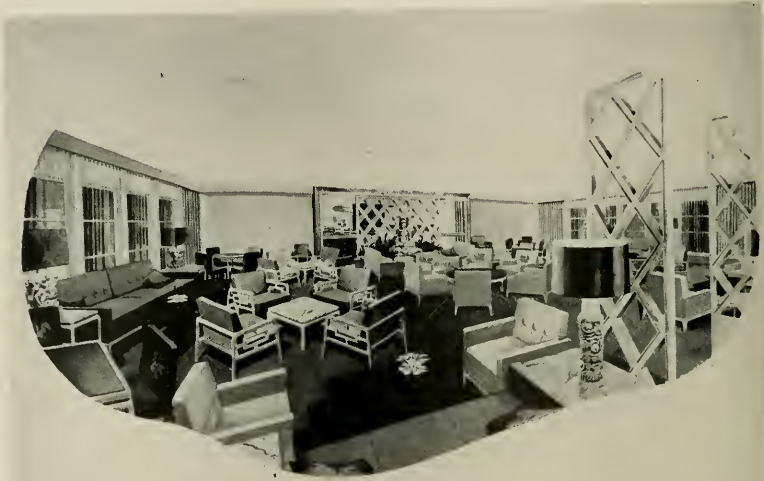
Comfort on

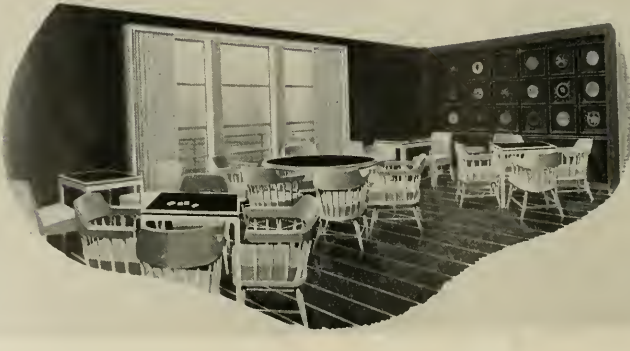
Finest Hotels Matched

The featured description of the new Round-the-World ships of the American President Lines in the July Pacific Marine Review is here expanded to show the type of arrangement and comfort that will be found

Main Lounge. (top) A perfect blending of pleasing pastels, the spacious main lounge of tha new Presidents Jackson, Adams, and Hayes is designed for comfort and gracious living.

Game Room. (bottom) Whether for stakes or for fun, the colorful game room on the round-the-world "President" liners offers opportunity for many pleasant and diverting hours.





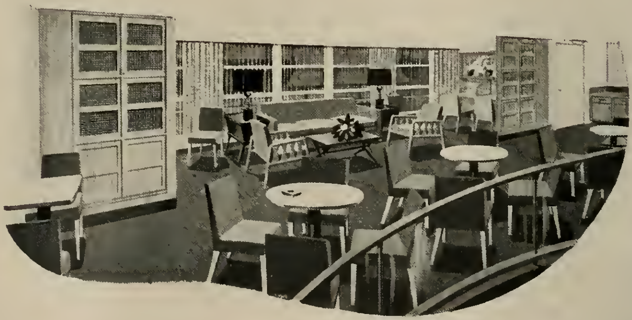
a Ship

By APL World Vessels

in the President Jackson, President Adams and President Hayes when they are put in service this coming year-end.

Mezzanine. (top) A mezzanine combination library and writing room affords the studious or nostalgic passenger a quiet rendezvous for reading, writing or reverie.

Club Room. (bottom) Architecturally interesting, the spacious club room on the Steamships Presidents Jackson, Adams and Hayes is informal, yet dignified and restrained. Stairway at the right leads to library and writing mezzanine.



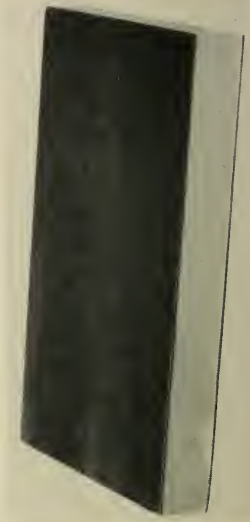
(Continued from page 29)

a certain zone or section of the ship. The second type is the Selective type, which announces the exact compartment reporting a fire.

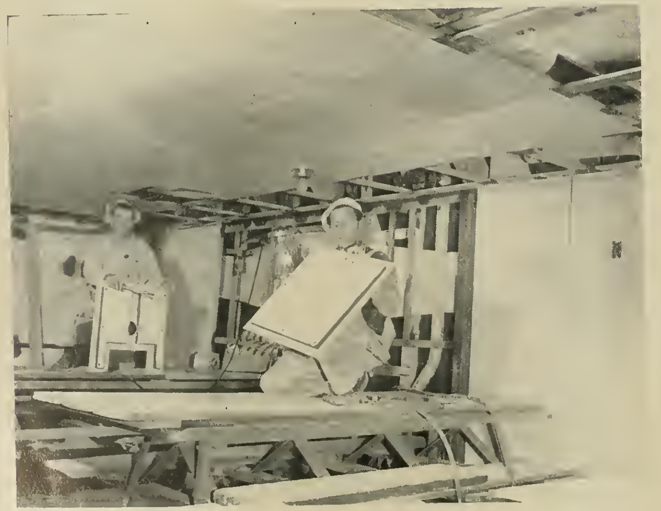
In addition to the above, the usual complement of portable extinguishers, fire axes and so forth are fitted as per Government regulations.

Not alone in the obvious places does the American shipbuilder of today put safety equipment. It will be found in inconspicuous places as extra toughening of hose covering, such as strong, lightweight and fireproof "Grate-X" for floors, and catwalks, and even in protective types of paint such as "Spraykote." Ignition-proof plastic table and dresser tops and tightly woven fabrics suggest that nothing is overlooked in the prevention of fire.

Unseen by passengers aboard certain of the new luxury liners—but built into the vessels under Navy supervision—are defense features which give them safety factors far beyond the requirements for ordinary civilian passenger ships. Extra water-tight compartments below the water line, extra supporting beams under decks, to provide for possible future gun-mounts, "paravane" attachments on the bow testify to the fact that the ships could be transformed to attack transports at short notice should they be needed for war duty. But as to fire at sea, a passenger on an American ship can be sure of a degree of fire protection at least as comprehensive as that in the finest hotel. American shipowners and shipbuilders need not take such askance references to their ships as the one in the article referred to. Their ships are *safely* built.



Marinite with cross-banded wood veneer facings.



A typical installation of acoustical units being applied to ceiling. Unit consists of sound-absorbing pad with perforated marine veneer facing. Note sound absorbing pads are cut back to allow marine veneer to be attached direct of furring channels. Bulkheads being lined with Marinite panels.

The "C-Trader"

—New Advance in Packaged Lumber Carriers

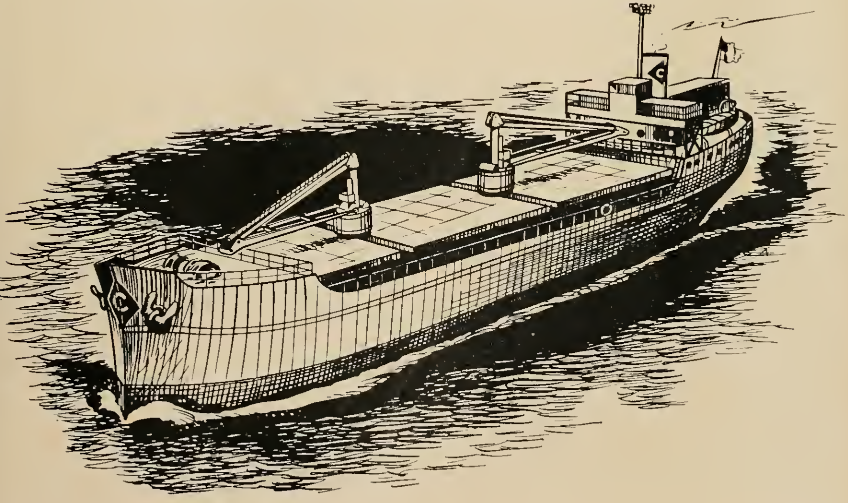
W. R. CHAMBERLIN & Company, who last year broke precedent in the lumber trade with their packaged lumber carrier *C-Coaster,* will soon enlarge the service with still another type of vessel, the motorship *C-Trader.*

Built as the N3-M-A-1 *Laughlan McKay* by the Penn-Jersey Shipbuilding Corp. of Camden in 1944, the new vessel represents a considerable improvement in the design of vessels which traditionally have plied this trade, embodying shallower draft and greater speed. The vessel is 269′ 10″ overall in length, has a 42′ 6″ beam. Main propulsion machinery consists of a Cooper-Bessemer 1300 HP 2-cycle direct drive diesel engine which will give the ship a speed of approximately 10½ knots. Auxiliary power will consist of two Buda diesel engines turning Crocker-Wheeler 115 V DC generators for ship's use and two General Motors G268A diesel engines turning Westinghouse 440 V 60-cycle AC generators, the latter of which will supply power for the operation of cargo gear. In addition, the vessel is equipped with a 40 KW generator connected with main drive shaft, which generator has sufficient capacity to supply the entire needs of the vessel while she is under way, enabling other generators to be shut down for maintenance purposes.

The vessel will lift from 1,800,000 to 2,000,000 board feet of lumber per voyage compared with 650,000 feet on the C-Coaster, and will maintain a complement of twenty-seven men. In addition, the vessel will be equipped with every modern device for safety of personnel and cargo, including an RCA ship-to-shore telephone and a Westinghouse type MU radar. She has house and machinery aft and three hatches forward. The hatches, because of their extremely large size, readily lend themselves to the stowage of "packaged lumber." They are 51′ 2″ long and 31′ 6″ wide; each hold in the ship is 56′ long and 40′ wide. Thus the dimensions of the hatches and the holds are so close they allow the elimination of further stowage of lumber products into wings or trunks; and instead of the hatch being merely a transfer point for cargo, the hatch itself becomes the stowage area for the cargo. Lumber is tied in bundles with wrie rope and loaded and unloaded in that manner. The wire rope is returned on the ship's next voyage north.

The vessel is presently at Horne Brothers Shipyard, Newport News, Va., undergoing classification work. Upon completion of this work the vessel will proceed to the Pacific Coast for the installation of a new type cargo gear, which will consist of two self-contained, full revolving, hydraulically powered, high speed level-luffing kingpost type

The MS "C-Trader" owned and equipped by W. R. Chamberlin & Co., is designed to be 50% more efficient and is believed to be the first vessel flying the American flag ever to be outfitted with hydraulically powered, high speed, level-luffing cranes for handling packaged lumber.



C COASTER

W. R. Chamberlin, Jr., Vice-President
W. R. Chamberlin & Co.

A. A. Eggum, Vice-President
W. R. Chamberlin & Co.

cranes, designed especially for the *C-Trader* by Colby Steel & Manufacturing Inc. of Seattle. It is contemplated that by use of these two cranes a full cargo can be loaded in approximately 20 hours and discharged in approximately 14 hours. This represents a substantial saving in time over the customary loading and discharging of lumber with conventional cargo handling gear.

In operation, all motions of the cranes will be simple and positive in action, with the hoist, rotating and luffing motions actuated by two conveniently positioned control levers. Movement at the cargo hook will correspond directly to the motion and direction imparted to the control levers. Inherent characteristics of the Vickers' hydraulic equipment will prevent overloading of the cranes. Power limiting devices will prevent extreme rates of acceleration, and will effectively keep maximum power demands on the ship's generators within designed limits. The power unit on each crane is driven by a marine type, continuous rated squirrel cage electric motor manufactured by Westinghouse.

The capacity of each crane varies from 10,000 lbs at 50 foot maximum radius to 20,000 lbs. at 12 foot minimum radius, with a hoist speed varying from 50 FPM at full load to 150 FPM with no load. The boom can be luffed from maximum to minimum radius in about 18 seconds.

The company's experience with the *C-Coaster* has been entirely up to expectations. This experience has led to the present expansion, with further increases in the fleet contemplated. The new ship will be in service on the Pacific Coast about September 15.

An interesting sidelight on the operation is the extent of the wire rope required. The *C-Coaster* uses about 200 slings of 16 to 20 feet each, while the *C-Trader* will use about 750 slings, or upwards of 15,000 feet.

Showing packaged lumber being handled aboard the "C-Coaster".

Admiral Cochrane Named to Maritime Board

. . . And Promptly Confirmed by the Senate

Vice-Admiral Edward Lull Cochrane has been nominated by President Truman for membership on the three-man Maritime Board and is the first nominee to replace the three appointees now serving temporarily. The complete permanent board is to be named within 90 days of the absorption of the department into the Department of Commerce.

Admiral Cochrane was born at Mare Island, Calif., March 18, 1892, the son of Brigadier General Henry Clay Cochrane of the Marine Corps. He attended high school at Chester, Pa., attended the University of Pennsylvania, and the Naval Academy from which he graduated with distinction. Much of his naval experience has been in engineering and construction duties except for early service on the battleship *Rhode Island* during the occupation of Vera Cruz, and such special assignments as the Safety at Sea Conference, and attachment to the American Embassy at London. His many years in the Bureau of Construction and Repair culminated in appointment as Chief of the Bureau of Ships after that Bureau was consolidated with the Bureau of Engineering to become the Bureau of Ships. While serving as Chief of the Bureau he was promoted to the rank of Vice-Admiral.

Vice-Adm. Edward L. Cochrane

Admiral Cochrane has been president of the Society of Naval Architects and Marine Engineers, was a member of the President's Advisory Committee on the Merchant Marine, and is now head of the Department of Naval Architecture and Marine Engineering at the Massachusetts Institute of Technology.

The Problem of a New Trans-Isthmian Canal

By DR. WILLIAM H. HOBBS

EDITOR'S NOTE: *We have published various articles on different phases of the problem of transit between the Atlantic and the Pacific, most of them dealing with the Isthmus of Panama. Because Dr. Hobbs' article presents factors which are no doubt unfamiliar to most people and because the project seems to possess much merit, we are offering it as a part of our series.*

THE American Continent, which stretches from the Arctic to the Antarctic, has opposed a barrier to ocean traffic between the Atlantic and the Pacific oceans, which unite all the great nations of the world. Almost four and a half centuries ago the search for a ship passage through or around this barrier was started. None having been found, in the nineteenth century projects for cutting a ship canal through the narrowest sections of this barrier began to appear. The possible projects, all lock canals, and their lengths were three in number, viz.: at the isthmuses of Panama (51 miles), Nicaragua (173 miles) and Tehuantepec (165 miles). The more serious consideration was accorded the Panama and Nicaragua projects, and their possible canal routes were extensively surveyed. The Panama lock canal, begun by the French, was completed by the United States and was opened in 1914.

With the increased volume of ocean traffic and a general large increase in the size of both commercial and naval vessels, it has become clear that beginning in 1960 this lock canal at Panama will be unable to meet the demands of interocean commerce without imposing delays on shipping that will become increasingly serious. Moreover, with the conquest of the air the canal is now vulnerable to modern warplanes of even moderate power. The time has arrived when it is imperative to provide a canal of greater capacity and of less vulnerability. This canal must be able to admit the largest vessels and forward them in comparative security.

On December 28, 1945, the Congress of the United States by public law 208 called upon a committee of engineers to make a two-year study of "how to increase the capacity and security of the Panama Canal," but though the wording of the law gave prominence to the Panama location, the committee was asked to examine other locations to determine whether they might not be better. After considering very inadequately "30 canal sites," this committee has now recommended that the present lock canal at Panama be converted to a sea-level one and doubled in width within an estimated period of ten years and at an estimated cost of 2½ billion dollars. It is admitted by the committee that even as so converted the Panama Canal would be vulnerable to bombing by aircraft, and, if hit, would be blocked to traffic for at least a matter of weeks.

The time is thus ripe to consider whether the committee's decision is a wise one, and whether it is not possible to pierce the isthmian region in a different place, and so secure a canal with a larger measure of security.

The two alternate sites are obviously the Nicaragua and the Tehuantepec isthmuses. The former must be eliminated because of its excessive seismicity. During the preceding three centuries two cities near the route of the proposed canal have each been destroyed seven times by earthquake. The Tehuantepec Isthmus, however, is located in the space between two rising and hence seismic mountain ranges, the Sierra Madre de Chiapas and the Sierra Madre del Sur. It is therefore relatively little menaced, and during the last three centuries no destructive earthquake has been reported from it.

Let us then consider the Tehuantepec Isthmus as a possible site for a canal. The hardrock backbone of the Isthmus is here much lower and also much narrower than elsewhere, and is flanked on both sides by featureless plains which rise generally less than fifty feet above the sea.

It is proposed to cross the isthmus by a straight canal made up of two open ditches and a tunnel through the mountain backbone between them.

Canons transverse to the axis of the range permit of excavating the tunnel, not only from each of its two portals, but simultaneously also in two directions from each of seven constructional and ventilating shafts a few hundred feet only in depth. From the mouths of each of these shafts railroads with all-down grades can be constructed so that the excavated rock can be transported by gravity and dumped beside the open ditches to protect them from all but direct bomb hits. Dams in the Canons to the

A GRADUATE of Worcester Polytechnic Institute, Dr. Hobbs also has degrees from Johns Hopkins University, the University of Michigan, and has studied at the University of Heidelberg. An expert engineer as well as geologist, he has taught geology both in America and abroad. From 1886 to 1906 he was with the U. S. Geological Survey, becoming U. S. Assistant Geologist in 1896. From 1926 to 1929 he was Director of the University of Michigan Greenland Expeditions. Member of many of the world's learned societies, he is the author of numerous books on geology and polar exploration, as well as biographies of Admiral Peary, and General Leonard Wood. He was a member of the O. S. S. in World War II.

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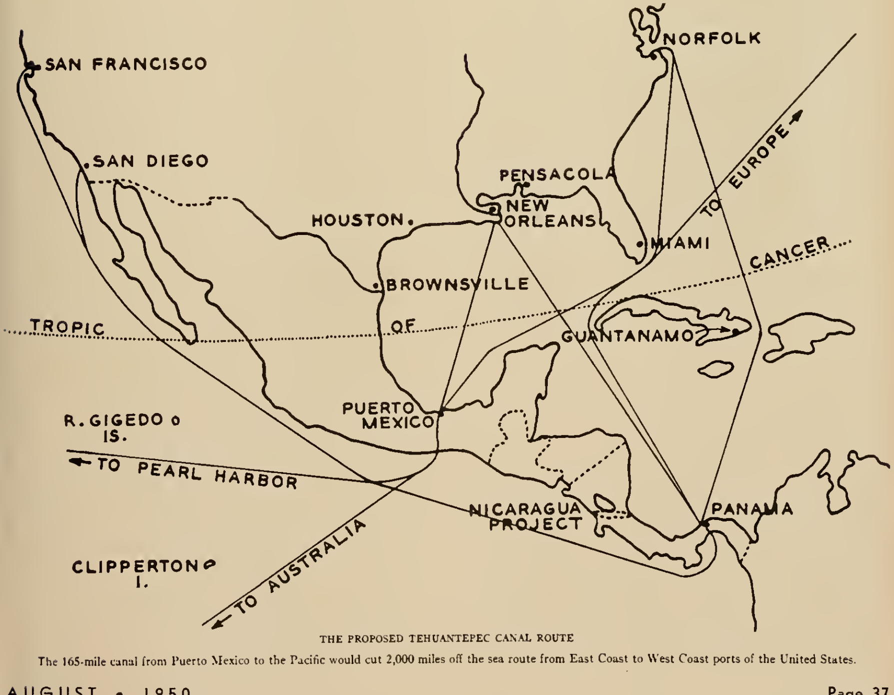
*Pacific Marine Review is reprinting this article through the courtesy of the author and the United States Naval Institute "Proceedings." It appeared in Volume 76, Number 2.

east of and above the shafts will impound the water in reservoirs, and underground hydroelectric plants will supply the power for operation of the hoists and railways, as well as for electrification of the tunnel and the two twin ditches. The climate of the region is one of very heavy rainfall. The rainy season lasts from July through January and, the dry season from February to June.

It is proposed to cross each of the two plains by open twin ditches whose channels will aggregate sixty-three miles in length. The tunnel portion will also be sixty-three miles long, though really made up of eight tunnels joined at their ends at the constructional shafts. Together they with the open ditches make a straight canal from the Gulf of Mexico, east of the estuary of the Coatzacoalcos River, to the Pacific at the *Laguna Inferior*. For operation this straight canal has great advantages over any sinuous one like that at Panama, and it can transit ships of any desired length.

The subsurface rock of the plains is of soft Tertiary and Pleistocene sediments, which can be excavated by power shovel or bulldozer. The hard rock of the tunnel section is of crystalline types (granite, gneiss and schist) on the south side, and of Cretaceous sediments (in part heavy Comanchean Limestone) on the northern flank. No sufficiently thorough geological study of this section has yet been made, though Ver Wiebe has made reconnaissance studies some twenty years ago, and Bose has prepared a geological section along the Tehuantepec Railway, which crosses the isthmus near but somewhat further to the west. The best geological map of Mexico is one prepared to illustrate a report issued by the *Oficina de Geologia de Departamento de Planacion y Estudios de la C. N. I. (Recursos Hydraulicos May—June, 1942, Mexico, D. F.) Ayuntiamento y Balderas.*

The open ditch sections of the canal are planned as twin waterways, each for one-way traffic and 175 feet in width (Fig. 6) and three miles apart. The advantages over a single ditch for two-way traffic is that the excavation is much less, collisions of vessels within restricted channels is obviated, and only one would be put out of commission by a single bomb hit. Intercommunicating passages will serve to maintain the normal level of the water in both channels. The tunnel section is 135 feet wide with a maximum height of 175 feet. This will permit the passage of a capital ship of 118 feet beam at a speed of three to four knots (Fig. 3) The notches in the walls are for electric railways to supply propulsion for vessels. Six tunnel sid-



THE PROPOSED TEHUANTEPEC CANAL ROUTE

The 165-mile canal from Puerto Mexico to the Pacific would cut 2,000 miles off the sea route from East Coast to West Coast ports of the United States.

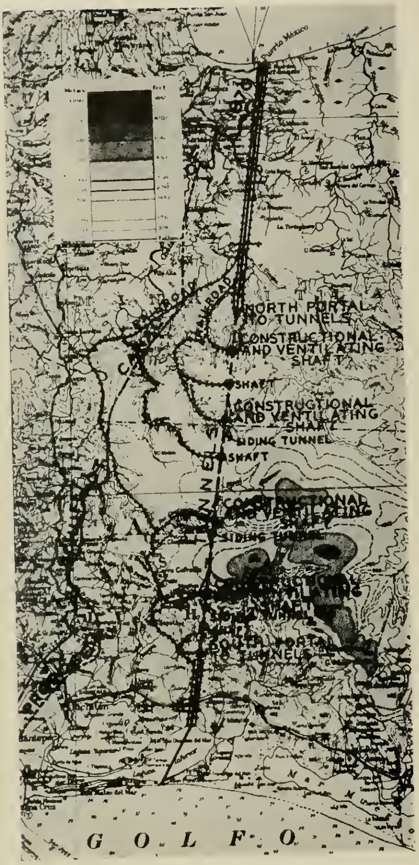

NORTH PORTAL OF TUNNELS
CONSTRUCTIONAL AND VENTILATING SHAFT
SHAFT
CONSTRUCTIONAL AND VENTILATING SHAFT
SIDING TUNNEL
SHAFT
CONSTRUCTIONAL AND VENTILATING SHAFT
SIDING TUNNEL
SOUTH PORTAL OF TUNNELS
G O L F O

Figure 2. Details of Tehuantepec Route.

ings, each a mile in length, will promote two-way traffic throught the tunnel.*

The advantages of this proposed Tehuantepec canal over that recommended for conversion of the Panama Canal to sea level are many. They are as follows:

1. The Panama project would provide only a single interocean canal, as it does at present. The Tehuantepec project provides two, which are 1000 miles apart.

2. During the period of construction (possibly as much as ten years) the Panama Canal, in the case of the Tehuantepec project, would continue to be in unobstructed use.

3. Throughout its length the Tehuantepec canal would be less vulnerable to attack, the tunnel section particularly. The converted Panama Canal would be insecure under attack and the studies have indicated that, if blocked, it would require weeks to reopen it. The portals of the proposed tunnel at Tehuantepec, if constructed of concrete heavy wire reinforced (as were the German submarine pens during World War II), would be almost completely indestructible.

To adequately protect the canal, a Canal Zone, for which cession of Mexican territory would be required, need not sever the Mexican national domain, since it would not include the land above the tunnel section. The treaty of cession would confer the right to police the shaft openings, damsites and hydroelectric plants in order to prevent sabotage, and would guarantee the right to protect the tunnel area during war or threatened war.

4. In time of war with menace from both ocean fronts, the fleet, when at the canal, could have a fully protected two-ocean base from which to move to either front as might be required. Such protection for a fleet would be quite unique anywhere in the world.

5. Excepting only traffic with the west coast of South America, the proposed Tehuantepec canal would cut 2000 miles of sea lanes from the Panama route. This would apply to all trans-Atlantic traffic and to that between the naval base at Newport News, Virginia, and the San Diego (California) or Pearl Harbor (Hawaii) bases. Equal reductions would be secured for commercial sea travel between ports on the East Coast and the Gulf of Mexico and those on the West Coast. New traffic from the east central United States through the Mississippi River and the port of New Orleans would relieve the now heavy traffic on transcontinental railway lines, as new traffic from Gulf ports would be greatly increased with a canal at the Tehuantepec Isthmus.

6. In time of war, the sea approaches to the Tehuantepec canal would be guarded on the Atlantic front by air patrols and by radar operated from airfields at Brownsville (Texas), Houston (Texas), New Orleans (Louisiana), Pensacola (Florida), Miami (Florida), Guantanamo (Cuba), and perhaps Yucatan; whereas the Panama Canal cannot be thus guarded. The recent enforced withdrawal of air patrols over Panamanian territory, and the 1948 uprisings at Bogota, Colombia, only 50 miles from the Panama Canal, demonstrated only too clearly the insecurity of the Panama Canal Zone.

7. Off the Pacific front the sea approaches to the Tehuantepec canal could be guarded in part by air patrols and by radar operating from bases in the Revilla Gigedo and the Galapagos island groups and from Clipperton Island.

8. A canal on the Isthmus of Tehuantepec is much

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*The cross-section of the tunnel originally planned was considerably larger in order to admit for transit the largest projected naval vessels with exception of the monstrous aircraft carrier already begun but now abandoned by order of the Secretary of Defense. The smaller and otherwise modified section of the tunnel will accommodate all commercial vessels, including the ocean liners *Queen Elizabeth* and *Queen Mary*, also any longer vessels that may later be constructed, and the trend in construction is toward greater speed, which will preclude a much larger beam. (The *Queen Elizabeth* and *Queen Mary* have each a beam of 118 feet. Our modern battleships now number more than those of all other nations. Until our potential enemy builds modern battleships, our own can be divided between Pacific and Atlantic fleets.) Because of its tow-track notches, which will admit the high flight decks, the tunnel section of the canal will admit (narrowly) all our largest aircraft carriers for very slow transit. Moreover, a future widening of the tunnel section could be accomplished without interfering with the transit of any but the largest vessels.

favored by its known immunity from destructive earthquakes throughout the last three centuries, although earthquakes have been disastrous for much of Mexico and Central America.

9. The northwestern third of the Tehuantepec Isthmus is a highly productive oil field, so that local fuel oil would be available for vessels transiting the canal. This oil, of intermediate base similar to Midcontinent crude, yielded 6,056,400 bbl. in 1948.

10. The Pacific terminal of the proposed Tehuantepec canal is within the Lower Lagoon, and inasmuch as this lagoon is at sea level and has a narrow connection with the sea, no tidal locks will be required on this front, although they are necessary for the Panama project.

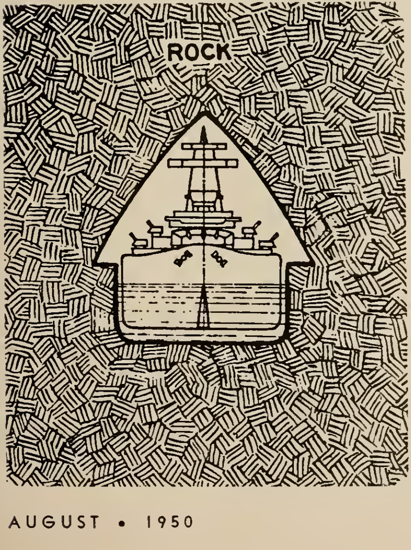
Moreover, the excess of tide range, mean high to mean low tide, on the Pacific front of the Tehuantepec canal project over that on its Atlantic terminus, is only two feet; as against twelve to twenty feet at the Pacific front of the Panama Canal.

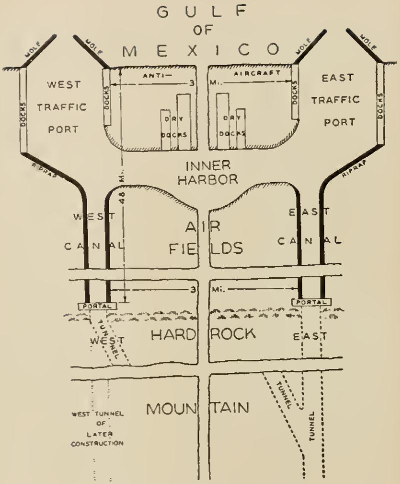
11. The operational advantages of the straight course of the proposed Tehuantepec canal over the sinuous one at Panama are so great as to call for no argument. The largest ocean liners, too long to use the Panama Canal, could be transited at Tehuantepec. Electrification will be available not only for illumination, but also for the propulsion of vessels by electric mules. Thus an otherwise difficult ventilation of the tunnel because of stack fumes will be obviated.

For the reason that no large ship tunnel has yet been made, as well as because of the very favorable natural conditions at the Tehuantepec Isthmus, it seems best to indicate the order in which constructional operations can best be undertaken. They are:

1. Prepare a precise profile survey both topographical and geological along the line of the proposed canal, and put down core drill borings from several canyon bottoms within the tunnel section in order to determine the nature of the rock and the depth of its surface zone of weathering.

Figure 3. Detail of Tunnel Design.





Gulf of Mexico Canal Terminal.

Figure 4.

2. Build the artificial harbor at the northern terminus of the canal, and dredge the natural port on the Pacific front.

3. Excavate a twenty-five mile long channel east of the northern ditch section of the canal to divert the waters of the eastern tributaries of the Coatzacoalcos River. This ditch will expose a section through the soft Tertiary sediments under the northern plain, and will indicate how steep a slope can be allowed for the sidewalls of the twin canal ditches.

4. Build the railroads across the plain to the north tunnel portal, and up the canyons to the tunnel shaft locations. In all preliminary constructional operations Diesel locomotives can be used with local fuel supplied at the town of Coatzacoalcos for the northern area, and at Salina Cruz for the southern.

5. Begin excavation of tunnel from each of the portals and use the excavated rock to build the breakwaters of the harbors.

6. Build dams at third, fifth, and sixth shaft locations counting from the north. Sink shafts to tunnel levels in order to secure the rock for erecting the dams, and build underground hydroelectric installations in canyon walls below the dams.

7. Electrify the railways, the hoists in the tunnel

(Continued on page 75)

The Thearle Yacht —"Seadrift"

BACK in 1924 there was completed in the yards of Livingston & Cooper in Hull, England, of pure wrought iron, a yacht which was destined to sail the seven seas and touch at many ports of the world. Named *Seadrift,* she was described by a writer of the time as "a beautiful specimen of cruising yacht, and a vessel of extraordinary interest". Not the least of the interest is in the fact that she has been acquired by Philip H. Thearle, Chief Engineer at Todd Shipyards Corp., Alameda, Calif., and he and his family are making it their permanent home.

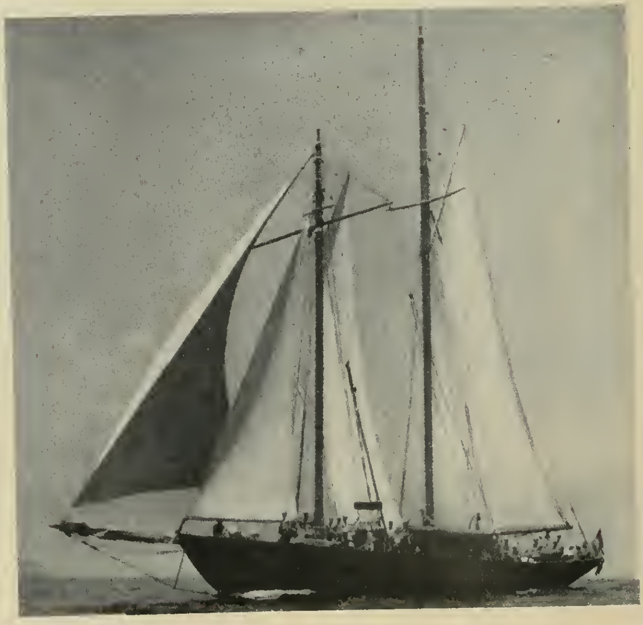
Seadrift was designed by John G. Alden of Boston as an auxiliary schooner and constructed under Lloyd's supervision in about 10 months. Her maiden voyage was from Hull to Cowes under sail and power. Built of steel to Lloyd's highest class, *Seadrift* is of 110 tons gross and 29.69 tons net. The length overall is 84 ft. 3 ins. (length on waterline, 62 ft.), extreme beam 20 ft., draught 10 ft. 3 ins., and displacement 184 tons. The yacht is polemasted, the length of her foremast being 60 ft. and the main mast 70 ft. 6 ins. She has a sail area of about 3,500 sq. ft.

In addition to the regular cruising sails, *Seadrift* carries a fisherman's staysail and a square sail. Her canvas, all of flax, was made by Ratsey and Lapthorn, and a new set was added in 1946. As to her design, this type of ship was primarily evolved from the Gloucester fishing vessel, and *Seadrift* has proved a splendid sea boat.

Her lines below water are substantially the same as those of Gloucester fishing vessels, but the freeboard was increased to seven feet at the bow, five feet at the stern with a minimum of four feet amidships all to the deck line, and in addition there is an eighteen-inch bulwark capped with a seven-inch-wide teak rail. Everything on deck is of Burma teak; the deck itself is two and three-eighths inches thick, and the skylights are all heavy steamship construction.

The mechanical equipment of the yacht is complete. Her installation consists of a 140-HP Chrysler Royal Marine Gasoline Engine, which gives *Seadrift* a speed

"Seadrift".



of 9½ knots. The tank capacity gives the yacht a cruising radius without replenishment of nearly 2,000 miles. Bendix engine controls are mounted in a small deck cockpit.

There is a 3-kilowatt Lister Blackstone diesel generator which charges the storage batteries of Edison type for 110 volt lighting and power purposes, and there is a centrifugal pump which is used for pumping bilge, washing decks, anchor and anchor chains as hoisted, and for fire service. The anchors are raised by a three speed electric windlass which is also used for hoisting sails. Water for domestic purposes is supplied to all parts of the vessel by a small Delco pressure plant. All the machinery can be served either direct from the generator or from the batteries.

As for the interior, with the exception of the forecastle and galley, all is San Domingo mahogany, and to give some idea of the exceptional care exercised in construction, all of the mahogany is from a single tree. The stateroom and saloon partitions are of the "built-up type" in panels consisting of ¾" mahogany, then a layer of carpet felt, then ¾" pine laid laterally, then again carpet felt, finishing with a ¾" mahogany panel. All panels are "one piece" and this construction makes the partition work readily removable, soundproof and squeakproof. No nails—all screws.

The accommodations consist of a four-bunk forecastle for crew with about seven feet headroom, toilet, and large wash stand; the galley runs clear across the vessel with ports on each side, with large skylight overhead; the range is rock gas, and the refrigeration electric. Aft of this comes two staterooms, with wardrobes, and usual steamer type wash stands; then comes the saloon 20 feet by 11 feet, with swinging and serving tables, with comfortable transoms on each side. Off this is the bath room and in all there are five toilets on the vessel properly distributed.

Following the saloon aft, comes the chartroom situated over part of the engine room. It is a unit in itself and makes a comfortable refuge in bad weather, with a nice transom and plenty of room for charts, flags, instruments, etc.; in fact, it should be the most used part of the vessel as the large "Smithson" instantaneous-closing ports give ample view of the deck and beyond. The captain's stateroom is incorporated in this chartroom. The entire top of the chartroom comes off in one piece and the floor is readily removable in sections so that in case of any difficulty or change in the motor it can be hoisted out of the vessel without destruction to any of the woodwork. Leading down from this room is the large commodious owner's stateroom with two berths. Guest accommodations include one double and two single staterooms and four berths in main saloon.

Throughout the vessel there is more than six feet head room, and a large sail locker with entrance from the cockpit is provided.

To give some idea of the strength of the hull, the deck underneath is lined with ¼" plate between the masts, with stringer plates running to the sides, full plating across for five feet at the bow, and seven feet at the stern, which is also strengthened with angle beams running with the ship. Concealed in the partition work are tubular columns tying the carlings to the hull framing. The middle partition in the vessel is a steel bulkhead, with a watertight door.

Skipper Phil Thearle

* * *

Phil Thearle's shipbuilding career started around 1909, when he was practicing naval architecture and marine engineering, and doing general superintending in several Coast shipyards, including Albina Engine, Skinner and Eddy, and Union Iron Works.

In 1932, he was naval architect and marine engineer with Theodore E. Ferris, New York, completing the designs of 985-foot U. S. Lines' superliners that were never built. In December 1935, he became the naval architect in the Superintending Constructor's office for Bethlehem's San Francisco yard, building the Destroyers *Maury* and *McCall*. From there, in October of 1938, he was naval architect in charge of new design at Bremerton Navy Yard, where they designed some light seaplane tenders and YT's. In July, 1939, he became superintendent marine engineer for the Army at Fort Mason.

During the war, in February, 1943, he was general superintendent of U. S. Navy Repair Base at Pier 25, operated by General Engineering and Drydock Co. From 1944 to 1946 he was assistant to general superintendent at Bethlehem, handling the rebuilding of the Swedish motorship *Mirrabooca*, outfitting of the U. S. Navy tanker, *Kennabago*, and the completion and outfitting of *Admiral Capps* and *Admiral Eberle;* rebuilding of Escort Carrier *Salamaua*, and other large Navy repair jobs. Then in May of 1946 he became superintendent, Hull Division, at Bethlehem-Alameda Yard, where they were building the *Presidents Cleveland* and *Wilson*.

Back with Army Transport during the reconversion period, he resigned in 1949 and went with Todd as Chief Engineer at Alameda.

Phil is a real shipbuilder with a real ship of his own. Seems like they were made for each other. And if you should find yourself tapping Phil's rum barrel (if any), for a toast to "The King, God bless Him," why, it's Phil you would mean, God bless him!

Crandall Rebuilds Railway Dry Dock In Copenhagen

SHIPBUILDING in Northern Europe has been a major industry for nearly 2,000 years, and even before the Hansiatic League was formed during the middle ages for the mutual protection of the Merchant Marine operating out of such cities at Hamburg, Lubeck and Danzig, Copenhagen was renowned as a center of trade, shipping and shipbuilding, its vessels plying the seven seas.

During the more recent era, Burmeister & Wain, in Copenhagen, acquired an enviable reputation for excellence in naval architecture and shipbuilding, and is noted for its pioneer work in the development of diesel engines. In 1947 its extensive shipyard consisted of modern shipbuilding ways, fabricating shops, two large floating dry docks, a medium-size basin dry dock and three English type slipways. The rebuilding of this plant, after designs by Crandall Dry Dock Engineers, Inc. of Cambridge, Mass., was completed and the first vessel drydocked in February of last year. Since then it has been in constant use.

The slipways, of about 1000 tons capacity, were installed some 70 years ago. The cradles were open framed, three-way structures, supported by truck wheels running on crane type rails. The track above water level consisted of an elaborate arrangement of brick arches and vaults supporting a series of granite blocks under the rails of each way and the paving between the ways, forming the working floor. This system of arches was supported in turn by brick columns resting on wood piling. The submerged portion of the track was made of yellow pine, three longitudinal members under the rails supported by cross caps and wood piling. Each cradle was hauled by a series of eye-bars, ten feet long, connected to a hydraulic piston with an equivalent stroke. To haul a vessel, the hydraulic piston, in each case, would pull up ten feet, then with the cradle held on a pawl, an eyebar would be removed, the piston returned to its original position, re-connected to the eyebars, and the operation repeated. This required 40 men for four to five hours and a nearly equal time and man power for lowering.

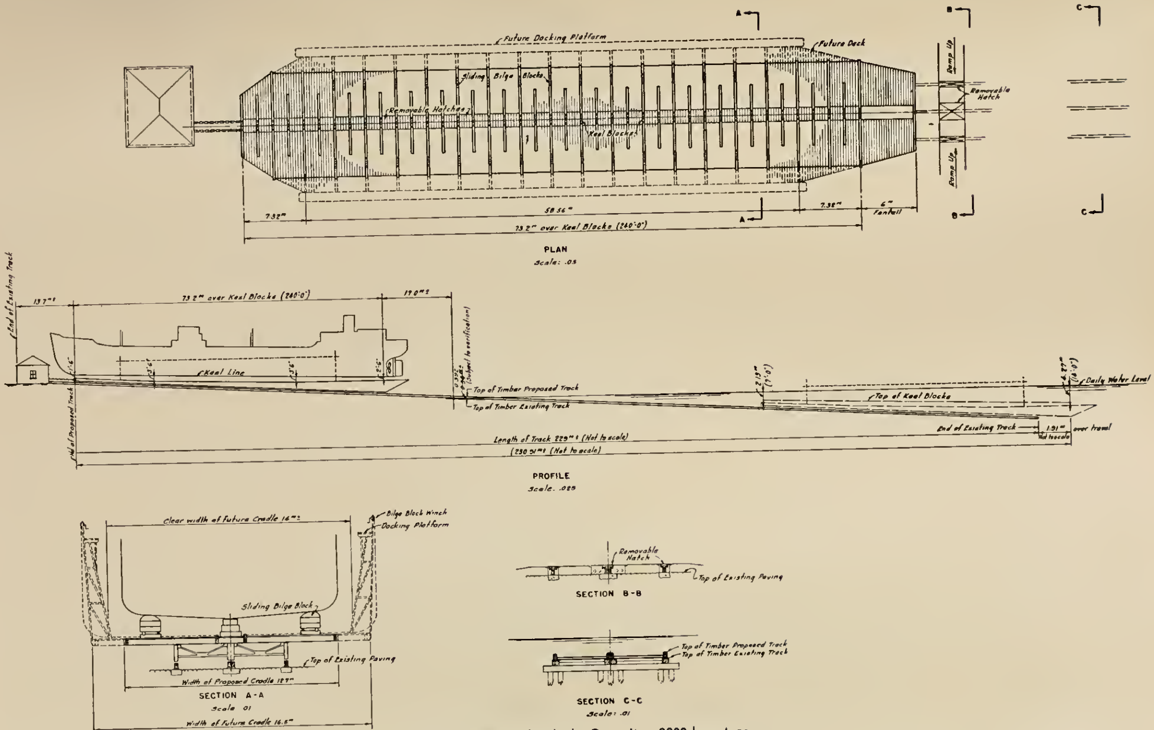
The tracks of these old slipways were found to be in remarkably good physical condition, although they showed considerable settlement due to heavy load concentrations under the forefoot, inevitable where the line of keel blocks is parallel to the slope of the ways. However, because of the man-hours involved in operation, consideration was given to the adoption of something more modern and economical and it was decided as a first step to install a railway dry dock of 2000 tons capacity of the following characteristics, on the site of the middle unit:

Length over keel blocks	240 ft.
Width over transverse beams	41.7 ft.
Ultimate width over transverse beams	54 ft.
Depth of water over keel blocks at daily water level — forward	7 ft.
— aft	14 ft.

Normally, a railway dry dock of this capacity would have a two-way track for best economy. However, in view of the excellent condition of the old foundations, it was found advantageous to use three ways supported

Old slipway showing eye-bar haulage.

New railway dry dock. Rollers and hauling chains in foreground.



Proposed railway dry dock. Capacity—2000 long tons.

on the existing structure and foundation except for a short extension at the lower end. For the portion above normal water level, the track was constructed of concrete, each way resting on the original granite slabs. The balance of the track was oak, constructed as a unit ashore and sheathed for protection against marine borers. Superimposed on the old track structure, it was carefully adjusted for alignment and gradient, then fastened in place. Special cement mortar was used between the top of the old track and the bottom of the new one of such thicknesses as necessary to provide a uniform gradient.

The cradle, of structural steel, consists of a heavy central longitudinal runner and two side runners, corresponding to the track ways, carrying the principal transverse beams. Because of the existing slipways at either side, it was not possible to make these beams of full length necessary for the docking platforms, but these are to be lengthened and docking platforms erected at some later date when the adjacent slipways will have been removed. The cradle is decked for the full length to provide a convenient working floor. There are 15 bilge blocks on each side sliding along the transverse beams, to be operated eventually by chains and hand

(Continued on page 73)

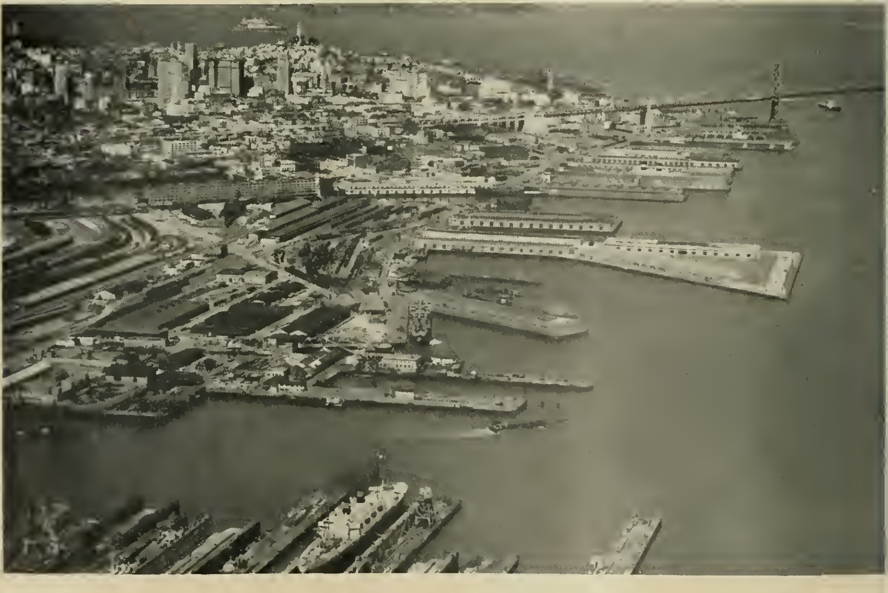
APL Gets S. F.'s Giant New Terminal

American President Lines and the Board of State Harbor Commissioners have entered into an agreement whereby the new Mission Rock Terminal, erected at a total cost of $6,500,000, will be assigned for the exclusive use of American President Lines' world-wide shipping facilities.

The new terminal, covering an area of fourteen acres, and providing six modern piers—50A, 50B, 50C, 50D, 50E, and 50F—is at the south end of the Embarcadero near the old "China Basin." It is triangular in shape with a depressed area in the center for loading and unloading of both trucks and railroad cars at dock level. Platforms for tail-gate loading and delivery are also provided.

Still to be constructed are office buildings on the new piers to take care of President Lines' dock personnel and Operating Department personnel from the uptown office.

Aerial view of Port of San Francisco from Central Basin (foreground) to Foreign Trade Zone (Pier 45, extreme upper left). Mission Rock Terminal, which has just been leased by American President Lines, is at right center. Representing an investment of more than $6,500,000 by the Board of State Harbor Commissioners, this will be one of the most modern cargo terminals in the U. S. when completed.



"Avalon" Installs Westinghouse Radar

WORLD travelers agree that no trip to Southern California is complete without making the cruise to Catalina Island. Every day throughout the year, the vessels of the Catalina Island Steamship Line make the two-hour run from the mainland to famed Avalon Bay, returning late in the afternoon. During the summer vacation season, two and occasionally three round trips are made each day.

While the trip is relatively short, part of it is through one of the busiest ports on the Pacific Coast where ships from all parts of the world mingle with the smaller craft of the fishing fleet and private yachts. Navigation through the intricate channels of the harbor with its traffic is no easy job for the captains of the SS *Avalon* and the SS *Catalina* under normal conditions with good visibility, but when the fog closes in, it becomes a truly difficult task. Outside the harbor, the problem is only slightly less difficult because of the number of small craft, both fishing and private, that commonly travel the area without a set course or a schedule.

Fog and heavy sea traffic pose no problems now to Capt. William H. Leisk, above, of the SS "Avalon", plying between the Southern California mainland and Avalon Bay, Catalina Island. Captain Leisk is shown watching the scope of the vessel's new Westinghouse type MU radar.

This navigational problem has recently been practically eliminated on the SS *Avalon* by the installation of a new Westinghouse type MU marine radar. With its antenna and transmitter mounted as a unit on the top of the bridge and its control console mounted adjacent to the chart table on the bridge, the radar now enables the captain to get a clear picture of the objects around his ship from a minimum of 80 yards to a maximum of 40 miles, depending on the range he selects. Bearings with respect to the ship's bow and distances to other ships, docks, and so on, can be determined quickly and accurately from the face of the indicator tube. The movements of other ships in the vicinity can also be watched, making it possible for the captain to anticipate changes in course or speed that may be required to avoid them.

By installing Westinghouse marine radar, the Catalina Island Steamship Line has acted in accordance with its policy of providing its vessels with the most modern devices to insure the maximum of safety, reliability and comfort to its passengers.

Antenna and transmitter of the SS "Avalon's" new Westinghouse type MU radar are mounted in the mushroom-shaped "radome" atop the bridge.

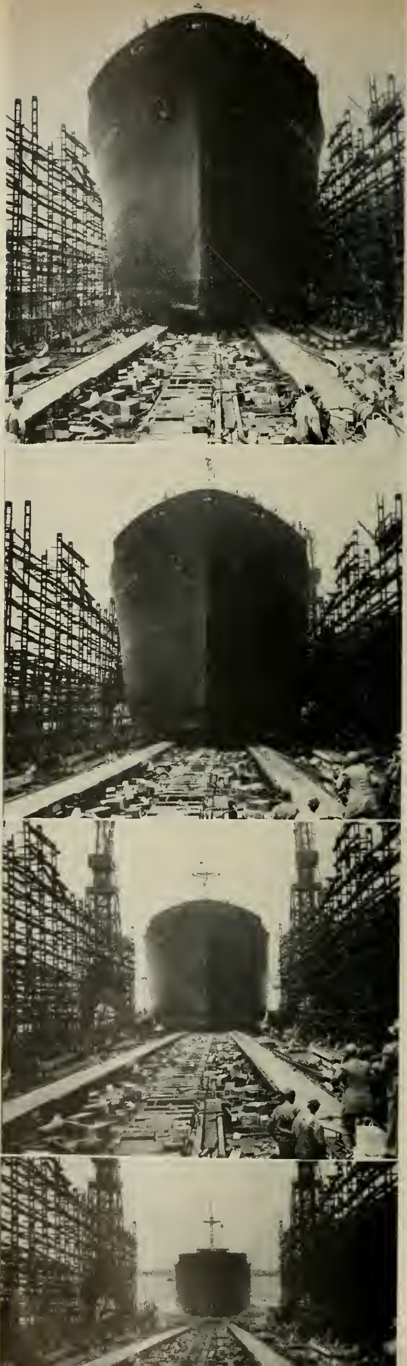
Just before the launching of the big tanker, "Atholl McBean", at Bethlehem's Sparrow Point Yard.

The "Atholl McBean"

—Newest Tanker Launched by Bethlehem

SECOND of five super tankers under construction at the Bethlehem Sparrows Point Shipyard for California Transport Corporation, a subsidiary of Standard Oil Company of California, was launched July 21. Named the *Atholl McBean* for one of the directors of the Standard Oil Company of California, the vessel was sponsored in his presence by his wife. They are residents of San Francisco.

The keel of the *Atholl McBean* was laid down last December 12, and the anticipated delivery date is the



Right: As the 28,000-ton vessel slid down the ways.

Below: At the launching of the "Atholl McBean". Left to right: R. G. Follis, T. S. Petersen, Mrs. Atholl McBean, sponsor, and Atholl McBean.

As the big ship cleared the ways immediately after launching.

latter part of October. These vessels each are 624 feet, 7½ inches long, 84 feet wide with depth of 44 feet, have a deadweight capacity of 28,000 tons and liquid cargo capacity of about 240,000 barrels.

Her two main boilers are Babcock & Wilcox, water tube, with superheaters, desuperheaters and air heaters. The ship is equipped with four cargo pumps with a total capacity of 18,000 barrels an hour. The engine is a Bethlehem double reduction gear cross compound turbine, delivering 12,500 shaft horsepower at 103 RPM, and a speed of 17 knots. The four-bladed propellers for these vessels are of the largest of the solid type ever made, being 22 feet in diameter, weighing about 58,500 pounds, and cast in one piece of manganese bronze.

The specifications and plans for this class of tanker were featured in the December '48 Pacific Marine Review following the award of the contract to the Bethlehem yard.

J. M. Willis, General Manager, Bethlehem Steel's Shipbuilding Division, Baltimore District, and Mrs. Willis entertained launching guests at the Sheraton-Belvedere. Among those in attendance were D. D. Strohmeier, Vice-President, Bethlehem Steel Company, Shipbuilding; the Governor of Maryland, William Preston Lane, Jr. and Mrs. Lane; the Mayor of Baltimore, Thomas D'Alesandro, Jr.; R. G. Follis, Chairman of the Board, and T. S. Petersen, President, Standard Oil Company of California; G. E. Lindley, President, California Transport Corporation, and Mrs. Lindley; E. W. Endter, President, California Oil Company, and Mrs. Endter, and, of course the McBeans.

* * *

Atholl McBean is one of the West's most noted industrialists. He was born in San Francisco in 1879 and graduated from the Hotchkiss School in Connecticut.

In addition to being chairman of the Board of Gladding, McBean & Co., and a director of the Standard Oil Company of California, he is a director of the Crocker First National Bank, San Francisco, Pacific Telephone and Telegraph Company, Newhall Land & Farming Company, White Investment Company, and the Pacific Mutual Life Insurance Company, and he is a member of the Finance Committee of the Fireman's Fund Insurance Company, the Crocker Estate and the Crocker Huffman Land & Water Company.

He was president of the San Francisco Chamber of Commerce from 1919 to 1921, and of the Industrial Association from 1921 to 1922. He was chairman of the Board of Directors of the Golden Gate International Exposition in 1939, and is a Consulting Professor of Industrial Management at Stanford University.

Atholl McBean, Director,
Standard Oil Company of California

Admiralty Decisions

Dollar's Court Victory

R. Stanley Dollar

There is probably no legal case in the maritime world that has aroused as great interest as that of *R. Stanley Dollar, et. al., vs. Emory S. Land, United States Maritime Commission, et. al.* Dollar has made a monumental fight, and, subject to a possible appeal to the U. S. Supreme Court, has won. There are thousands of people directly concerned with the outcome.

The decision of the United States Court of Appeals for the District of Columbia on July 17 was to the effect that the government must return the stock of the famous Round-the-World American President Lines formerly Dollar Steamship Lines—to R. Stanley Dollar and his associates of San Francisco. It was the unanimous decision of the three judges: Clark, Miller, and Prettyman, who heard the case on April 19, 1950, that the Maritime Commission never acquired the outright title to the stock, and that it was only pledged by Dollar interests to cover a $7,500,000 debt, which has long since been paid.

Following is, in part, the opinion of the Court as read by Circuit Judge Prettyman, who began by quoting the Supreme Court's description of the case, on its former sustaining of this same Court of Appeals, as follows:

"Petitioners are present and former members of the United States Maritime Commission. Respondents are stockholders of Dollar Steamship Lines, Inc., Ltd. (Dollar of Delaware), whose corporate name was changed to American President Lines, Ltd., subsequent to the execution in 1938 of a contract out of which the present litigation arises. By 1937 Dollar of Delaware was in difficult financial straits. The problems confronting it and the various steps taken to remedy the situation need not be recapitulated here. It is sufficient for purposes of the various questions presented by this case to say that the Commission and respondents entered into a contract in 1938 by which respondents delivered their common stock in Dollar of Delaware, endorsed in blank, to the ommission; and the Commission released some of respondents from certain obligations and agreed to grant Dollar of Delaware an operating subsidy and to make a loan to it and to obtain for it another loan from the Reconstruction Finance Corporation.

"The subsidy was granted and the loans were made. By 1943 American President Lines, Ltd., had fully paid all indebtedness due the United States. Respondents thereupon demanded return of their shares of stock from the then members of the Commission, claiming that the shares had only been pledged as collateral for a debt which had been paid. The members of the Commission refused to surrender the shares, claiming that they had not been pledged under the 1938 contract but transferred outright.

Summarizing the issues on the merits the Court said:

"The allegations of the complaint, if proved, would establish that petitioners are unlawfully withholding respondents' property under the claim that it belongs to the United States. That conclusion would fol-

(Continued on page 67)

"Genco No. 5" is launched at the Decatur, Ala., shipyard of the Ingalls Shipbuilding Corporation. This welded steel chemical barge carries 800 tons of sulphuric acid. Equipped with a 40 HP Buda diesel engine which drives the hydraulic pump, supplying pressure and power for the Lewis cargo pumps, the barge is 175 feet long and 26 feet wide with a depth of 10 feet six inches. It was constructed for the Allied Chemical & Dye Corporation.

Trend Toward Unusual Bulk Carriers

THE Technical Staff of the American Bureau of Shipping has taken an active part during these postwar years in the designs for conversion of ocean-going vessels for the transportation of unusual liquids and chemicals in bulk.

Lately, shipowners and industrialists have awakened to the opportunities offered for the carriage of large bulk cargoes of such commodities over long sea routes, such as between Gulf of Mexico and East Coast U. S. A. ports, and to foreign markets.

Tank barges had been more or less perfected for handling these special cargoes, but to transport 5,000 tons of chemicals in an ocean-going vessel meant new problems. At the same time the transportation of liquified petroleum gas was developed.

One of the important problems of the producer of chemicals is to ensure control of the quality of the cargo

(Continued on page 77)

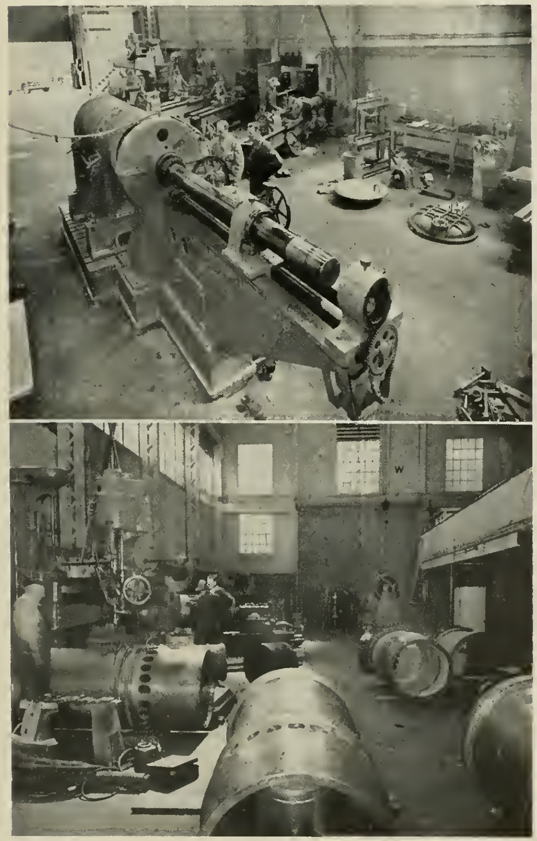
The above article is a part of the address of J. Lewis Luckenbach at the annual meeting of the American Bureau of Shipping of which he is chairman of the Board of Directors.

This 10,000 barrel capacity barge, "Arctic Chief", was built by Albina Engine and Machine Works, Portland, Ore., in a record time of six weeks for Archie R. Ferguson, trading post operator in farthest away Alaska Territory. It was towed to Kotzebue, Alaska after being loaded from the Union Oil tanker "Oleum."

Liner Work at West Winds

IN THE history of the marine diesel engine, the West Coast has not exactly been known as a world center for major repair work, but work now going on in San Francisco may finally indicate a trend toward considerable volume of this work finding its way to the Pacific.

Important in this trend is the repair firm of West Winds, Inc. In the past 90 days, their Battery Street shops have handled replacement orders for nine main cylinder liners, and overhauls of seventeen complete auxiliary cylinder units. Not so long ago it was only in cases of extreme necessity that liner work was done on this coast, but now it is becoming routine. One recent job involved the replacing of five out of six main cylinders from one vessel.



Machining operations on a group of new cylinder liners at West Winds, San Francisco, shops. In the upper photo Eric Johnson, President, and Bob Caraway, Shop Superintendent, inspect giant boring machine rebuilt under the latter's direction to handle volume work on liners of all sizes. Below is the complete set of liners from a well known Pacific vessel.

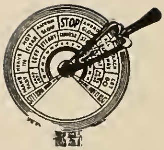
Believed to be unique also is the extreme size of the liners now being bored; all of the above main cylinders were from 740 millimeter (29″) Burmeister and Wain, one of the largest bore diesels in existence. Weighing 3½ tons, these liners are cast from locally-made patterns by the McCauley Foundry of Berkeley.

Work in large sized bores is greatly facilitated at West Winds through use of a huge specially-built boring machine, capable of boring diameters to seven feet.

There is no certainty as to what causes cylinder liner wear, although there are plenty of theories. One Chief may blame undue wear on sulphur in the oil, and another prescribe to the "electrolysis" or "scavenger air" theory. A recent example on a Scandanavian ship adds to the mystery; two sister ships not only had the same engines, but they also used the same kind of rings and the same oil. One's set of liners showed little wear over a long period—the other consistently wore ¾ mm every 1000 hours! Whatever the reason for the wear, there is still plenty of need for periodic overhaul, and operators are coming more and more to realize that the oftener this is done on a routine instead of an emergency basis, the more money will be saved.

Steady as you go!

KNOWLEDGE IS THE STRAIGHT COURSE TO ADVANCEMENT



A Department for Deck Officers

by "The Skipper"

Questions Welcomed. Just Address "The Skipper," Pacific Marine Review, 580 Market St., San Francisco, California

Determining the GM In Cargo Vessels

Part (II)

IN our last discussion regarding the means of calculating the measure of stability in merchant vessels, I suggested two formulae by which the approximate GM of the vessel may be found. Now I wish to present the method by which the GM may be found with great accuracy. The first step will be to study the two formulae by which the effects of weight shifts may be found. The movement of a single weight in a ship, up or down, or athwartship, will cause the Center of Gravity of the vessel to shift also, although usually in a small proportion to the distance that the weight was shifted:

$$\text{Shift in C. G.} = \frac{\text{Wt. x Dist. (from C. G.)}}{\text{Displacement (allowing for wt. used)}}$$

Remember that if the weight is added to the ship, then you must add it to the displacement in your problem. If the weight were discharged from the ship, you would have to subtract it from the displacement. If a weight already in the vessel were shifted, then no change in displacement is used. Now that you know the shift in the vessel's C. G., you must be careful in judging the direction in which it has shifted. The following rule will apply very nicely: The Shift in C. G. is Toward the Addition of a Weight; and Away from the Removal of a Weight. In just the simple shifting of a weight in the vessel, then common sense will show you that the C. G. shifts in the same direction that the weight was moved.

The above formula is fine for single weights moved in and out of a vessel but your greatest concern will probably be in the loading and discharging of your vessel, in which many different weights are located at varying distances from the vessel's C. G. The formula following is one of the simplest and undoubtedly the most practical one that you will find. Quite often there is involved a large number of simple additions and multiplications, but that, I am sure will not deter you. One of the terms used here will be KG, which is the vertical distance in feet, of the center of gravity above the Keel. Note here, however, that not only does the vessel have its C.G. but so does each compartment, tank, storeroom, etc., throughout the ship. The C.G. of a space in the ship is that point which would be the center of the weight concentration if the compartment in question were filled with an homogenous type of cargo, fuel, water, etc. The blueprint known as the Capacity Plan shows graphically this point in each space (profile view) by means of an asterisk.

It is not necessary to use dividers to pick off the distance from the Keel to a particular compartment's C.G., because that distance is shown in table form on the same blueprint. Look into that table which gives the cubic capacity, bale and grain, for each compartment; in the same table you will find a column headed by the title Vertical Center of Gravity or VCG. and in this column you can pick out the VCG (same as KG, previously mentioned) for all cargo spaces, fuel & water tanks, storerooms, etc.

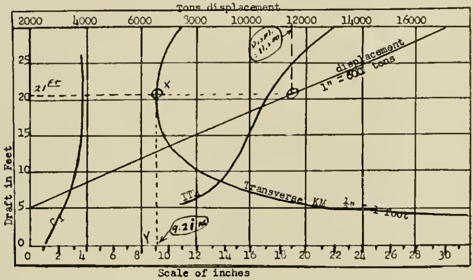
The weight placed in a compartment, multiplied by the VCG of that compartment will give you a number of Foot-Tons, which we shall call Moments (M):

Then Wt. x KG (VCG) = Moments

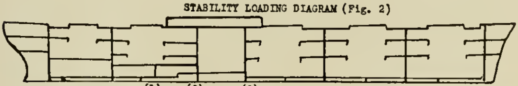
If we now work this formula for each weight in the ship, *and* for the ship itself, we can find the KG of the ship as loaded, regardless of the condition of load or method of weight distribution. This may be accomplished by dividing the sum of all the Moments(M) by the sum of all the Weights(W); the result is the New KG, or height of the present C.G. above the Keel.

Figures I and 2.

(Fig. 1)



STABILITY LOADING DIAGRAM (Fig. 2)



Cargo Spaces		(1) Ton ÷ 100	(2) VCG	(3) Moments
#1 on deck			48.1	
U/T			41.0	
L/T			30.2	
L/H			16.1	
#2 on deck			46.0	
U/T			37.3	
L/T			27.6	
L/H			14.6	
#3 on deck			45.0	
U/T			36.1	
L/T			26.6	
L/H			13.6	
#4 on deck			45.0	
U/T			37.8	
L/T			27.5	
L/H			18.3	
#5 on deck			47.0	
T/D			38.1	
L/H			26.1	
Cargo TOTAL			////	
Fuel	bbls	//////////	//////	//////////
DB#1			3.2	
#2			2.5	
#3			2.3	
#4			2.1	
#5			2.1	
#6			2.3	
#8			2.9	
#9			2.2	
#10			2.4	
Settlers			26.6	
WgTk#1			8.8	
#2			8.7	
Fuel Total			////	
Water & Stores		///////	//////	//////////
Potablee P/S			17.5	
DB#7(water)			3.1	
Fore peak			16.2	
Aft peak			24.4	
Stores			40.0	
Total Water,etc			////	
TOTAL (DWT)			/////	

Draft	Displ. in Salt W	KM	req'd GM
28	15935	25.52	
27	15295	25.38	
26-07	15025	25.34	0.83
26	14670	25.27	0.88
25	14050	25.20	0.95
24	13430	25.16	1.03
23	12810	25.17	1.12
22	12190	25.22	1.20
21	11590	25.32	1.31
20	10990	25.47	1.43
19	10390	25.72	1.70
18	9790	26.05	2.00
17	9190	26.48	2.35
16	8590	27.03	2.84
15	7990	27.68	3.14
14	7410	28.50	3.57
13	6830	29.60	4.02

Fwd Draft ______ Mean Draft ______
Aft Draft ______

(W) x (VCG) = (M)
Light Ship 66.53 25.72 = 1711.15
Total DWT
TOTAL/WT. ______ /MOMENTS ______
(Displ)

$\frac{\text{Total Moments}}{\text{Total Weight}}$ = New KG

With Total Wt., enter Displ. Column and pick out the related Draft & KM

KM - KG = GM

Check the tabulated Draft with actual draft.

The Req'd GM is the GM needed with one damaged compartment(data obtainable from shipbuilders)

I. E.
Ship (displ) W x KG = M
Cargo #1 L/H w x kg = m
Cargo #3 L/H w x kg = m
Cargo #5 L/H w x kg = m
Double Bottoms w x kg = m
Water & Stores w x kg = m
Totals W M

$\frac{\text{M total}}{\text{W total}}$ = New KG of vessel as loaded

The total of all the Weights(W) will be the new Displacement. The same blueprint you just used will give you the mean draft that your vessel should now have, if your weight allowances were accurate. The simple proof of the pudding is to take the actual draft of the vessel and if they compare favorably, then your calculations are sound.

The next stage will be to find out what the height of the Metacenter (M) is above the Keel(K). Knowing the displacement or the mean draft of the vessel in salt water, and entering the Curves of Form or Hydrostatic Curves blueprints, you can readily pick out the KM, (Transverse Metacenter).

Then:

KM—KG=GM (Metacenter height)

Figure 1 is a brief sketch showing the method of taking the details of KM from the Hydrostatic Curves:

If, in our example, our vessel was found to have a displacement of 11,500 and/or a draft of 21 feet, then on the Hydrostatic Curve, a horizontal from the draft scale to the point of intersection with the curve of transverse KM (X), a vertical dropped to the inch scale at the bottom shows 9.2 inches. The legend along the Transverse KM curve shows us that every ½ inch equals 1 foot of KM so we have 9.2 inches or 18.4½ inches or 18.4 feet of KM. So if the KG calculated by the formula amounts to 16.8 feet, then:

KM—KG=GM
Or
18.4—16.8=1.6 feet of GM

The above example is of course hypothetical. The figures in our results do not jibe with those of any vessel known to me, but the means of extracting data from the Hydrostatic Curve should be fairly clear to you now.

This whole set of computations may be placed on one form for the

(Continued on page 70)

Pacific
WORLD
TRADE
Reg. U. S. Pat. Off

Lloyd's of London

By E. C. KESTER
Manager, Insurance Department
American President Lines

THE interest of the public in the operation of the institution known as Lloyd's of London is perennial, so Roderic Smart and I made some notes on the subject while in London recently. Smart is treasurer of the insurance firm of Bayly, Martin & Fay, Inc., which handles the coverage on American President Line ships.

The continued success of the Lloyd's organization probably results from two things. First, the liability of Syndicate members which is unlimited so far as their Syndicate interest is concerned. Members cross guarantee one another, so there is in fact the solid backing of the entire group. Second, the maintenance of flexibility and independence of the Underwriters.

The organization consists of members, grouped into Syndicates. Each Syndicate designates an individual to act as Underwriter. The member gives the underwriter a power of attorney and has no further personal control over the business written. There are about 2400 members divided into approximately 200 Syndicates. Some Underwriters represent several Syndicates.

The requirements and qualifications of members are quite strict and include: An "eligible" background; financial worth is not sufficient. A minimum deposit of £10,000 in the fund, which cannot be touched. Deposit of £1,000 into a premium trust fund, and bank certificate to the effect that the individual is worth £75,000 (his own property, out of trust and unencumbered for one year). A limit of premium income is fixed by the committee of Lloyd's based on deposits of the members.

Operations of each Syndicate are on a three year basis. No profits may be withdrawn for three years after the underwriting year. At the end of three years, one fourth of the profit must be put into the fund. In other words, the funds of the Syndicate are constantly being built up and so the entire structure is constantly expanding. In addition to this fund which is the ultimate property of the Syndicate members, ½ of 1% of all premiums are put into a general fund of Lloyd's available for use by the entire organization.

A Committee of Lloyd's directs and controls the operations. This committee has an audit made of all accounts annually. If any Syndicate has not made a profit and the funds on deposit are thereby reduced, the Committee stops the Underwriter until sufficient funds are on deposit. The Committee may also stop the writing of certain types of risks proved to be unsound, such as financial guarantee insurance. Of interest is a situation which arose a few years ago where a small Syndicate could not meet its obligations and in order that the good name of Lloyd's should not be impaired, other Syndicates stepped in and paid all remaining outstandings.

No portion of the premium is set aside for any type of loss. There are, however, Underwriters who specialize in certain risks, such as Hull total loss, and an Underwriter having written the entire risk may reinsure any particular line, thus confining his operation to the type of business he prefers. If an Underwriter could get the total loss of all business written, he naturally could reduce the rate.

This flexibility is one of the contributing factors to the success of the organization. For instance, an assured might want to become self insured for all risks but Hull particular damage, or they might insure for Hull total loss, general average, and fire only. This is the manner in which new lines of business are developed. C. E. Heath, the founder of one of our present Brokerage connections in London, was a pioneer in the writing of new types of coverage.

The explanation for the foregoing is that business is written by leads. A broker takes his proposition to one of the Underwriters known to be sympathetic and recognized as a specialist in the particular type of risk, and who will command the respect of other Underwriters. The Broker uses a document on which are set forth the essentials of the coverage. The Underwriter discusses the line, and initials the paper and it then is taken to other Underwriters to complete the line. Underwriters do not like the American market to take control and dictate the rates and terms as it makes them followers and not leaders, and the individual Underwriter is then not exercising his own judgment but following that of another group.

The room in operation looks like a stock exchange and the underwriters sit in a small space like a box, with a deputy and recording clerk. Sometimes several Brokers are lined up to get documents signed, so the business must be done quickly. When the line is placed, a Broker might discuss the placing for ten or twenty minutes, but once the conditions are fixed, the paper goes around the room rapidly until the full amount is subscribed, after which the Broker makes up the policy, presents the list and policy to the signing Bureau and the insurance is completed.

Initial approval of a claim rests with the leader but once the claim has been settled the general practice is for the matter to be referred to a Settler of Claims for Lloyd's.

So far as business in the United States is concerned, the premiums all remain in America in trust. On March 22, 1950 there was on deposit in this fund $266,370,592.61 of which 66.06% was cash. These premium deposits are regulated on the three year basis. In other words, withdrawals may be made only after underwriting results are known.

What is the effect of inflation? Some investments may decrease in value, but from an underwriting viewpoint, as values rise due to inflation so does insurance coverage, and premium volume follows.

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What fixes the rate? There is one guiding principle. Each Underwriter must show a profit at the end of the year. No profit and there is likely to be no Underwriter, the same as any other business. In fixing the rate, the experience of the insured line is the actual basis. The underwriter knows that the line has produced so many dollars in premium for the year, knows what the losses are, and how much he has made or lost on that particular risk. He cannot continue to lose and the Broker works to prevent too much profit. A total loss only affects the general picture, for, as stated, the Underwriter may have reinsured all or part of the total loss and therefore is not obliged to make up this loss in one or two years. It is the spread of the risk that gives protection.

When you consider that the Underwriters are each writing premiums amounting to something like £5,000,000 or more per annum, some idea of the volume of the transaction can be appreciated.

Reorganized World Trade Facilities in Commerce Dept.

In line with the recommendations of the Hoover Commission, various related activities of the Office of International Trade and the Office of Domestic Commerce have been merged.

The action establishes an Office of Industry and Commerce (OIC), abolishing the Office of Domestic Commerce and transferring all of its responsibilities and functions to the new Office.

Consolidates all of the industry-commodity units of BFDC in the new Office;

Transfers the responsibilities of the OIT with respect to commodities, export controls and transportation and communications to the new Office.

Export control activities will be carried in two divisions of the OIC under the supervision of an Assistant Director of the Office. The two divisions are Export Control Operations and Export Control Policy and Enforcement.

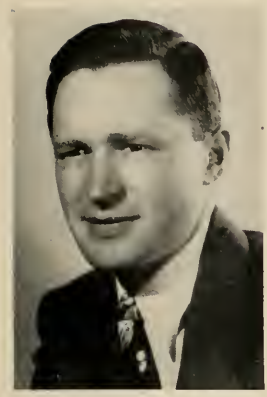
In the Office of International Trade, which retains its title, a new division is created and several units which formerly were branches now become divisions. The new unit is the Division of International Economic Analysis.

In the place of the former Areas Division in OIT, which has branches under it assigned to different geographic areas, new divisions have been created for each of the following: American Republics, British Commonwealth, Eastern European, Western European, Far Eastern and Near Eastern and African.

The Office of Business Economics and the Department Field Service (which together with the Office of Industry and Commerce and the Office of International Trade make up the BFDC) continue essentially unchanged.

H. B. McCoy, who headed up ODC becomes director of the new Office of Industry and Commerce, R. C. Miller continues to head OIT; M. Joseph Meehan continues to direct OBE, and Carlton Hayward continues as director of Field Service.

Jr. World Trade Assn. Elects Officers



John H. Robinson, President,
Jr. World Trade Association

John A. Sweeny, Secretary,
Jr. World Trade Association

John H. Robinson of Harper, Robinson and Company, has been elected president of the Junior World Trade Association of the San Francisco Chamber of Commerce.

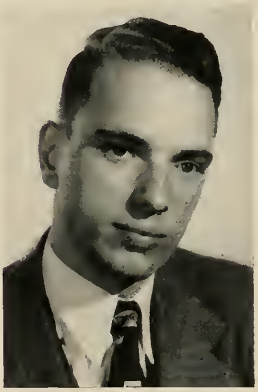
Robinson for the past four years has held the office of secretary of his company, which is a San Francisco custom house broker and foreign freight forwarder. He is a member of the Chamber's Port Promotion Program Committee and has also been active in port promotion work for the Junior World Trade Association, studying comparative cargo movements through the Golden Gate and other major ports.

Other officers chosen by the Association's board of directors at the same election are:

Vice president—Robert H. Langner, assistant manager of the World Trade department of the San Francisco Chamber of Commerce; secretary—John A. Sweeny, Fireman's Fund Insurance Company; and treasurer—Walter P. Boatwright, Jr., American President Lines, Ltd.

New directors elected in addition to the officers are: Ted Bartels, Matson Navigation Company; Don F. Bechter, Transpacific Transportation Company; Kenneth R. Hollingshead, Standard Oil Company of California; Patrick McFaull, Otis, McAllister and Company; and James H. Van Sicklen, Atkins, Kroll and Company.

Robert H. Langner, Vice President,
Jr. World Trade Association



Walter P. Boatwright, Jr., Treasurer,
Jr. World Trade Association

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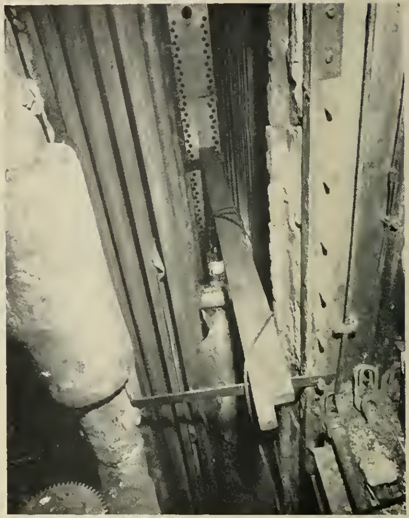


Renewing superheater elements and supports on General Patrick.

EVEN before the present emergency, activity had reached a high level at Pacific Ship Repair, Inc., Pier 25, San Francisco, when extensive repair, inactivation and conversion work was carried out on three Military Sea Transport Service vessels and one U. S. Army vessel simultaneously. The tanker USNS *Pecos,* the transport USNS *General Edwin D. Patrick,* the U. S. Army *FS 208* at Pier 25, and the transport USNS *General Hugh J.*

In the upper left panel are shown the vessels referred to in the article. Top picture shows giant Smith-Rice dredge participating in the work on the "General Patrick." All ships shown in the panel, and in the strip below, are in process of being serviced by Pacific Ship Repair.

Gaffey at an adjacent pier were all being worked at once, and just about every phase of ship work was accomplished by this organization on a no-delay basis.

Work on the P2-SE2-R1 USNS *General Edwin D. Patrick* included hull and engine annual inspection, installation of baggage rooms, repairs to pumps, generators, auxiliaries, turbines, etc. The superheater supports and superheater elements of two boilers were removed and replaced with new design supports and new elements.

Fuel oil burner clamping bolts were installed on four boilers for safety factor. USNS *Pecos* inactivation work was carried out to permit an indefinite layup of the vessel and, in addition, sand blasting and painting were accomplished on exterior decks. On the *General Gaffey* they accomplished hull and annual inspection and repairs to steam drum baffles in boilers and miscellaneous repairs to vessel's equipment and machinery throughout. The *FS 208* was in for a conversion to a training ship which included installation of quarters in addition to repairs to the main and auxiliary engines, generator, pumps, galley gear, etc., as well as installation of cargo booms, winches and rigging.

Klaveness Completes Two More

CHR. BLOM, Director of A. F. Klaveness & Co. A/S, has returned from a trip to England and Norway where he attended the trial trips and deliveries of the Company's two new motor vessels, M/S *Glenville* and M/S *Leoville*. On her trial trip in the Clyde in Scotland on June 19 the M/S *Glenville* attained a speed of 19 knots. She is a usual Klaveness Line type vessel built by Lithgow's Yard in Glasgow, Scotland. She is 442′ x 59′ x 39′6″ with a deadweight of 8700 tons, and powered by 9400 horse power Stork engine giving her an average working speed of 17½ knots. She is fitted with 14,000 cubic feet refrigerated space and 1,000 cubic feet deep freeze, is mechanically ventilated, and has six various sized deep tanks for carriage of vegetable oils. These tanks range from 48 tons up to a total of 2,100 tons. The vessel is also equipped with a special tank to carry 120 tons of latex. *Glenville* has the usual Klaveness Line passenger accommodations consisting of four double and four single cabins all with attached private bath. Her navigational equipment consists of all modern apparatus such as radar, gyro compass with automatic helmsman, SAL log, echo sounding, automatic fire extinguishing apparatus and latest in wireless and radio direction equipment.

The M/S *Glenville* will load on her maiden voyage in Los Angeles on August 5, and in San Francisco on August 7, in the regular Barber Line Service to Manila direct, thence Cebu and Hongkong.

A description of the new *Leoville* which went on trial trip from Burmeister & Wain's July 20 will be given in a later issue.

Messrs. A. F. Klaveness & Co. A/S announce that they have one more new vessel building, i.e. M/T *Sommerstad* to be delivered about August 20 from Amsterdam. Their fleet will then comprise a total of 22 vessels with a tonnage of 220,000 tons deadweight.

Chr. Blom, Director of A. F. Klaveness & Co. A/S

M/S Glenville, Klaveness' newest.

Running Lights

Johns-Manville Management and Staff Meet in S. F.

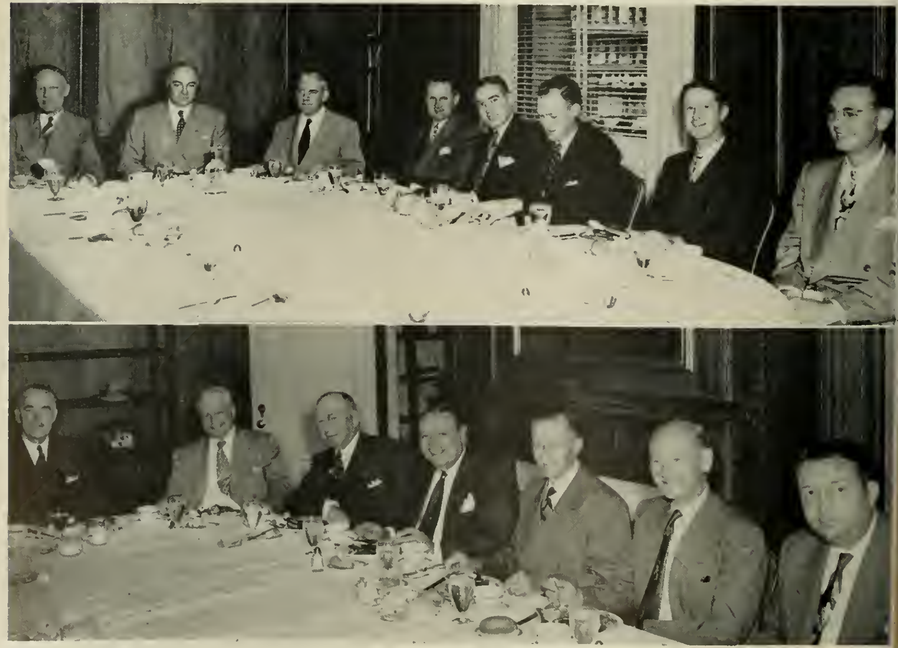
With Robert W. Lea, President of Johns-Manville Corporation, making one of his periodic visits to the Pacific region, a meeting of the organization's management and staff was recently held in San Francisco at which Chairman of the Board, Lewis H. Brown, was also present.

Purpose of the meeting was to discuss company and Pacific Coast matters. President Lea and Board Chairman Brown addressed the entire personnel in the San Francisco area, outlining the firm's activities and policies and answering queries from the staff.

Meeting of Johns-Manville's management and staff.

Top, left to right: E. H. Clausen, Manager, Industrial Products Div., San Francisco Dist.; Lewis H. Brown, Chairman of Board; M. E. Sweeney, Building Materials Commodity Manager, Pacific Region; A. F. Ahlgren, Credit Manager, Pacific Region; G. E. Harrington, Regional Manager, Construction Dept.; J. H. Goodwin, Manager, Insulation and Power Specialties, San Francsico Dist.; N. L. Best, Staff Manager, Packing and Electrical; W. A. Deal, San Francisco District Manager, Building Materials Div.

Bottom, left to right: Robert W. Lea, President of Johns-Manville Corp.; A. W. Knight, Industrial Commodity Manager, Pacific Region; G. R. Tierney, Staff Manager, Friction Materials; Joe L. Wood, Assistant Treasurer; T. S. Tulien, Manager, Special Industries, Pacific Region; J. H. Peterson, Staff Manager, Transite Pipe; George A. Fritz, Pacific Coast Manager, Government Dept.



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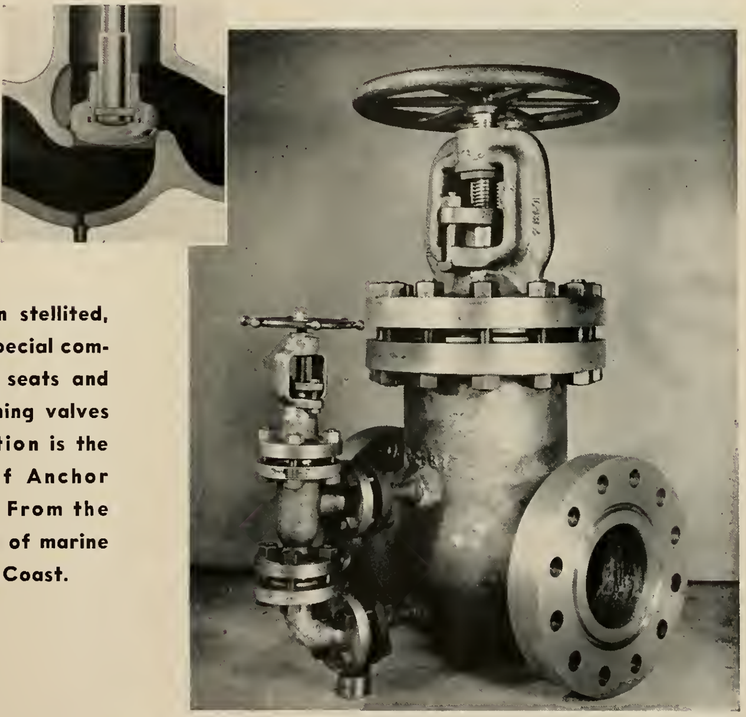

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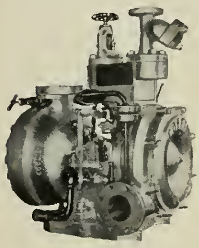

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New Prototype Ship To Get Bland Name

This article is reprinted from the American Legion's *Merchant Marine Bulletin* for August, and the opportunity is taken to acknowledge the debt which the maritime industry and the American people owe the Legion for the support it is giving the Merchant Marine. The importance of this support is beyond measure.—Editor.

The name of the late Schuyler Otis Bland, for many years representative in Congress of the First District of Virginia and Chairman of the Merchant Marine and Fisheries Committee of the House of Representatives, will be given to the prototype cargo vessel now under construction for the Maritime Administration.

Several months before Mr. Bland's death, he was awarded The American Legion's Medal of Honor for distinguished and meritorious services in the Congress of the United States which he rendered for the advancement of the nation's merchant fleet.

Mrs. Bland, who lives at Hampton, Virginia, will sponsor the vessel and christen it with her husband's name when it is launched at the Ingalls Shipbuilding Corporation yard, Pascagoula, Mississippi, probably in November or December.

The prototype cargo vessel was placed under construction early this year. It is intended as a substitute for the slower type Liberty ship constructed during World War II, to form the backbone of a large demand for the cargo type vessel in any future emergency.

Construction of the prototype ship will permit the Government to have completed and checked designs, including all working drawings, as well as complete bills of material, and experience in both the construction and operation of such a vessel, prior to any demand for large scale mass production. Thus construction of similar vessels of advanced design could be started without initial delay in event of an emergency.

Seattle's Helicopter Airport

The Seattle Port of Embarkation now has in operation the only helicopter airport on the Seattle waterfront and the only known regular rooftop helicopter service in that city.

The helicopter lands on a white circle target painted on top of the Seattle Port of Embarkation's huge five story concrete warehouse. It belongs to the Second Engineer Special Brigade, Fort Worden, and makes the run to the Port to speed delivery of priority military papers.

By land transportation the trip from Port to Fort Worden takes some three and a half hours. When the helicopter lands at the Port, traveling time is only 30 minutes. A military police guard is present at all landings to assist with arrivals.

Brig. General Fenton S. Jacobs, Commanding General, Seattle Port of Embarkation, said that any military installations may use the Port's helicopter airport if they receive prior approval from the Port.

When the helicopter is not in service a small Navion plane, which lands at Boeing Field, is used. Between the helicopter and the plane the Port and Fort Worden has had daily delivery service.

S. S. "Harry Lundeberg" Ex. "Pho-Pho"

Reversing an old tradition, a hale, hearty and very-much alive man was recently on hand July 18 to watch the christening of a ship bearing his name. The man was Harry Lundeberg, secretary-treasurer of the Sailor's Union of the Pacific; the ship was the SS *Harry Lundeberg,* owned and operated by Gypsum Carrier, Inc., a subsidiary of Kaiser Gypsum.

The ceremony saw Kaiser and SUP personnel gather to recognize the signing of a contract which calls for complete SUP manning of the vessel.

Lundeberg, a Kaiser spokesman said, "is a man who has done so much for so many of his fellow seamen that we felt he should be honored. He has devoted his life to improving the lot of his fellow men." A plaque awarded the SUP leader was "In Recognition of His Devotion to the Cause of Improving The Life of Men Who Sail the Seven Seas on the Occasion of the Naming of the SS *Harry Lundeberg,* Oakland, California, July 18, 1950, by Gypsum Carrier, Inc."

A 10,000 ton ship, converted specifically for bulk ore carrying, she will operate between Long Beach and Redwood City, California, plant cities of Kaiser Gypsum, and the island of San Marcos in the Gulf of California, where the company obtains its gypsum rock.

Lundeberg, himself, sailed the same route from Long Beach to San Marcos as second mate in 1938.

Acquisition of the vessel by Gypsum Carrier, Inc., and her naming in honor of Harry Lundeberg, followed a controversy between the SUP and the ship's former owner, Compania Maritime Samsoc Limitada, S. A., of Panamanian registry.

Interocean Fleet Grows

Erik Krag, Executive Vice President of Interocean Steamship Corporation, San Francisco, recently returned from a five weeks survey of business conditions in Europe. His attention was centered on the Continent, which the Interocean Line has now served for more than twenty years.

During his stay in Scandinavia he was received in audience by the King of Norway, by whom he was knighted in 1948. The King showed keen interest in the present shipping situation on both sides of the Pacific.

The shipowners in Scandinavia, represented in the U. S. A. by Interocean, are alert to the continued possibilities for the development of commercial shipping, and will soon place several new vessels into service.

While in Sweden, besides visiting with the Salen-Skaugen Line principals, Krag attended the launching at Kockums Wharf, Malmo, of the new M/S *Moldanger,* sistership of the speedster M/S *Berganger,* which recently made the trip from London with a full cargo of automobiles to Vancouver, B. C. in the smart time of 20 days. Immediately after the launching of the *Moldanger,* work was continued on a third sistership which will be named M/S *Risanger.*

When the new building program of Interocean Line is completed in 1951 they will have seven vessels equipped with all the most modern reefer facilities and up-to-date features, including superior accommodations for twelve passengers, serving the merchants of Belgium, Switzerland, Holland, Germany and France, with a frequency of about three sailing per month from the Pacific Coast.

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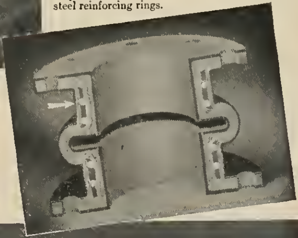

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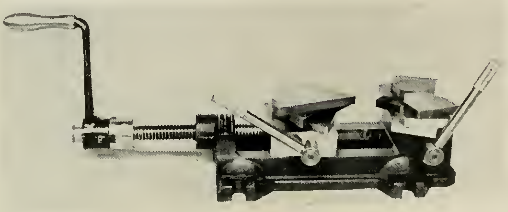

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Texaco's San Diego Harbor Guide

The Texas Company's Texaco Waterways Service has added to its set of cruising guides the Harbor Guide for San Diego Bay. In addition to showing the Company's waterfront service stations, the chart shows the various buoys, lighthouses, mailports and seaplane ports, as well as the cruising channels and yacht harbors. They also have two booklets, "More Fun Afloat" and "Carefree Outboarding," with sailing and lubrication instructions.

Charts and booklets are available at any Texaco marine station.

Radar For U. S. Ships

The use of radar on American ships is increasing. A total of 1,091 radar licenses have been issued by the Government to vessels operating under the U. S. Flag on deep seas, Great Lakes and inland waters. Nearly 650 such licenses apply to vessels operating on the ocaens.

Frank Cavanaugh

Repair Yard Expansion

The Wilmington ship repair facilities of the Cavanaugh Machine Works have recently been expanded to provide additional space for copper, pipe and steel work. The modernization and enlargement program on the 220 East B Street building includes the addition of 3100 feet of inside area, the construction of two new business offices, and the installation of new machine tools.

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Matson Marine Dept. Mgr.

Matson Lines has announced that Captain Harold R. Gillespie, who has been Manager of the Marine Department since 1948, has requested sea duty and effective September 1 will turn over the department to Terrence E. Rowe, who at present is District Operating Manager in Hawaii.

Captain Gillespie, under whose direction Matson's Marine Department reached its present high operating level, will first go on vacation and then late in September will take command of the *Lurline* while Captain Frank A. Johnson vacations on the mainland. Following his command of the *Lurline,* Captain Gillespie will report for assignment to the fleet. He will also be available to do special work for the Executive and Marine Departments.

Capt. Harold R. Gillespie

Terrence E. Rowe

The new manager of the Marine Department, Rowe, is a veteran sailor whose first introduction to the sea was as a seaman aboard the *Empress of Russia.* After several years in the trans-Atlantic trades and a year in square riggers, he worked in 1923 as Purser on the Dollar Line ships. He served ashore for Dollar as passenger agent in Naples and Genoa; freight agent in Yokohama and went to Honolulu as passenger agent in 1934. In 1937 he joined Theo. H. Davies & Co., Ltd., agents in Hawaii for C.P.R., Waterman Steamship Company and other steamship companies, and in 1940 he went with Castle & Cooke, Ltd. He became District Operating Manager for Matson in June, 1949.

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Joseph P. Grace Passes

Joseph P. Grace

Joseph P. Grace, for fifty years one of the leading figures in the development of inter-American trade, transportation, and industry, passed away July 15 at the age of 78. He was President and later Chairman of the Board of W. R. Grace & Company, which wholly owns the Grace Line, was half-owner of Panagra (Pan American-Grace Airways) and was active in a variety of other fields. He devoted his long business career to the steady development and diversification of the activities of Casa Grace, as the company is known throughout Latin America, and guided the business through the period when trade with the West Coast of South America was transformed by the completion of the Panama Canal which created new and vastly shorter trade routes. He also headed the company through two world wars when all Grace Line ships were requisitioned for war service and when Latin-American countries became vital sources of raw materials for munitions production.

Boilers Take a Lot of Tubing

More than 29 miles of tubing were manufactured in the Beaver Falls, Pa., plant of The Babcock & Wilcox Tube Company for boilers of the three new round-the-world ships of the American President Lines. This represents 211 tons of carbon and alloy, hot-finished and cold-drawn seamless steel tubing.

There will be two boilers in each ship to supply the 107,000 pounds of steam per hour required to drive the vessel at her cruising speed of 19 knots.

Fifty-three tons of tubes, 8¾″ O.D. by 11/16″ wall, were for the headers; 14½ tons of tubes, 4½″ O.D. by .340″ wall, were for the downcomers and risers; and the balance were for the water walls, superheaters and generators.

Some 107,751 feet of 1¼″ O.D. by .105″ wall cold-drawn seamless carbon steel tubing were for the boilers and generators. Superheater tubing accounted for 25,674 feet of 1¼″ O.D. by .135″ wall cold-drawn carbon steel tubing and an additional 6,527 feet of B&W Croloy 2¼″ tubing, an alloy developed by The Babcock & Wilcox Tube Company for high-temperature applications.

INDUSTRY profits by a better HARBOR

Combined with the rapid growth of the Port of Long Beach has been the development of the Long Beach industrial zone served by the Port. In recent years, more and more manufacturers have become aware of the unique advantages Long Beach offers to industry.

1. IDEAL CLIMATE: Produces excellent working conditions, resulting in higher working efficiency.
2. LOW COST LAND SITES, CONSTRUCTION, AND OPERATION: Large land areas, at reasonably low cost, allow economical plant construction.
3. ABUNDANT AND DIVERSIFIED LABOR SUPPLY: Skilled workers in all fields have settled in the Long Beach area and formed a large pool of skilled and semi-skilled labor.
4. LOW COST UTILITIES: Lowest gas rate schedule on the Pacific Coast. Municipally owned water wells, plus imported Colorado River water, insure an abundant supply of excellent quality water for normal industrial uses.
5. LOWER TAXES: Substantial savings for taxpayers due to large municipal revenues derived from oil which are sufficient to retire all present and anticipated indebtedness.
6. CARGO TRANSPORTATION: Three transcontinental railways connect Long Beach with the East. Rail rates to Long Beach are the same as to Los Angeles. Long Beach has a modern, municipally owned airport providing transcontinental air service. Approximately 180 common carrier truck lines serve the area, and all transcontinental lines operate direct service to and from Long Beach. The proximity of the industrial areas in Long Beach to the Port of Long Beach, which is only ten minutes from the open sea, is also an important factor. The Port has the ultimate in facilities for serving industry.

These factors of lowered operation and distribution costs are attracting new industry to Long Beach and are helping promote the rapid growth of America's Most Modern Port—

The Port of Long Beach
AMERICA'S MOST MODERN PORT, CALIFORNIA

Book Review

CABLE CAR DAZE IN SAN FRANCISCO, by Justin Murray, published by James Ladd Delkin. Price $3.50.

Justin Murray's series of drawings satirizing the famous cable car, and its rival, the bus, are all included in this new book. The drawings and captions on the pros and cons of the cable car are unrivaled, and guaranteed to give any true San Franciscan a hearty laugh. We recommend this book to anyone who wants a few minutes of unadulterated hilarity. All the charm of the cable car is depicted in its pages.

Engine Room And Yacht Harbor Puller

A new, larger capacity Mighty Midget Puller has been announced by the Coffing Hoist Company of Danville, Illinois. The Mighty Midget, a hand-operated hoist or puller, weighs 9½ pounds, takes up less than a foot of space, yet it handles a full 1,000-pound load on any lifting, stretching or pulling job.

This combination of easy portability and big pulling power makes it especially useful as an all-purpose maintenance tool for removing engines for overhaul, skidding light boats up ramps, for pulling pistons and cylinder liners on diesel-powered ships, and for countless other lifting, pulling jobs.

The handle serves a double purpose. It may be used as a straight lever when loads are especially heavy, or where lack of headroom allows only partial strokes; or the lower section may be locked at right angles to the upper section, forming a crank for high-speed lifting or pulling.

The 1,000-pound capacity Mighty Midget Puller is now in production and sells for $27.50. A smaller model, weighing only 6½ pounds, with 500-pound capacity, lists at $19.75. Both models are factory tested at 50 per cent overload.

Coffing Mighty Midget Puller easily pulls piston and cylinder liners on large diesel engines.

P. W. Foster, Jr. Heads New Foster Wheeler Division

Foster Wheeler Corporation has announced the appointment of Pell W. Foster, Jr., as Vice President in Charge of a newly created Equipment Division. This division will comprise the Steam, Industrial, Marine and Condenser Departments, which are existing commercial engineering groups serving the power generation, industrial processing and marine industries.

In making this announcement, Vice Admiral Earle W. Mills, U. S. N. (Ret'd), President and Chairman of the Board, stated that the new division would co-ordinate the activities of the present departments with the manufacturing and sales group.

Foster, a Director and Vice President in Charge of Production since 1946, will continue as active head of the Production and Procurement Departments.

Pell W. Foster, Jr.

Marine Men on L. A. Emergency Board

A skeleton Los Angeles harbor emergency force that can swing into action immediately in case of war, sabotage or major disaster has been activated under the direction of Adm. Frank D. Higbee, U.S.C.G. (Ret), Port Warden of the Port of Los Angeles. It has been in existence since 1947.

Chairmen of various groups pertaining to harbor facilities and security were named as follows:

Arthur Woll, tank ships; William Harrington, shipyards; Bert Hale, ships assistance; Orlo Peugh, Long Beach Harbor Department; John Fipps, small boats; Carl Moribito, ship service; C. T. Solomon, marine surveyors and underwriters; Cmdr. E. H. Zecher, pilots and Carl Fennema, tugboats.

Selfridge Succeeds Schneider at Moore's

T. Bruce Selfridge has been appointed Manager of Marine Sales for the Moore Dry Dock Co., San Francisco and Oakland, succeeding Ed J. Schneider, who recently resigned to become a banker.

Selfridge, who took marine engineering at the University of Glasgow, has been with Moore Dry Dock since 1939, and is located in their San Francisco office.

Bruce Selfridge

Ed. J. Schneider To Anglo-California National Bank

Don't try to reach Ed Schneider at Moore Dry Dock any more—for if you do you may expect to hear the common alibi "He's gone to the bank." That's right, Ed is now with the Anglo-California National Bank, San Francisco. You can read it in his eye.

But he is still interested actively in the maritime industry, and through it the community as a whole. Of especial interest here is his work as a Marine Exchange committeeman.

Ed Schneider

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Straits Settlement
Mediterranean

Frequent scheduled sailings, dry-cargo refrigeration, deep tanks. Modern passenger accommodations—outside cabins.

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CLEVELAND
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Cable Address: PACFAREAST

(Continued from page 48)

low if either of respondents' contentions were established: (1) that the Commission had no authority to purchase the shares or acquire them outright; or (2) that, even though such authority existed, the 1938 contract resulted not in an outright transfer but in a pledge of the shares."

Upon the subsequent trial the District Court held that the Commission had power to take absolute title to the stock and that the contract was one of sale rather than of pledge.

In the case at bar the findings of the trial judge rested entirely upon documentary evidence or undisputed basic facts. We review the case upon that basis.

The first problem presented to us upon this appeal is whether the Commission had authority to acquire the shares of stock outright by purchase. If it had such authority it had authority to acquire by purchase the stock of any operating ship company and to operate that company. The Commission was created by statute and has only such authority as the statute, directly or by necessary implication, confers upon it. It does not contend that the statute specifically or in terms confers the power to acquire and operate a steamship company, and careful reading does not reveal any such provision. The only section to which the Commission points as giving it the authority it claims is:

"The Commission may enter into such contracts, upon behalf of the United States, and may make such disbursements as may, in its discretion, be necessary to carry on the activities authorized by this chapter, or to protect, preserve, or improve the collateral held by the Commission to secure indebtedness, in the same manner that a private corporation may contract, within the scope of the authority conferred by its charter. . . . "

In its brief the Commission says, "The Commission's substantive powers are those granted it by statute, and its implied powers are those reasonably necessary and appropriate for it to administer its substantive powers, just as a private corporation's implied powers are those reasonably necessary and appropriate for it to carry out the substantive powers and objects provided by its charter."

The power to own and operate transoceanic steamship lines is a power of tremendous scope. It would involve decisions of vast national importance and the collection and disbursement of vast amounts of public funds. It is inconceivable to us that Congress would have left to implication so vast a power. We do not think that if Congress had intended the Maritime Commission to enter upon such ownership and operations it would have left the matter entirely to a clause which merely authorized the Commission to execute contracts.

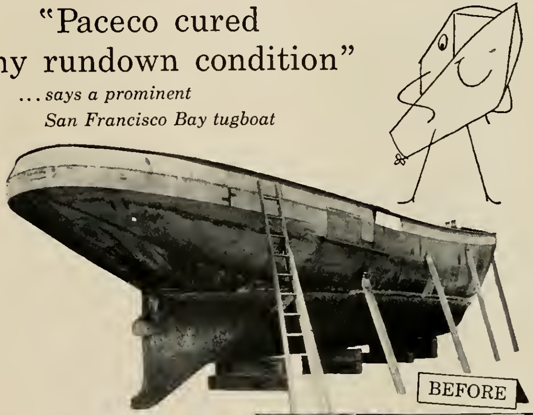
But the Commission does not say that it has a general power to acquire stock by purchase, apart from its other duties in respect to maritime operations. It says that its power to acquire stock is incident to its power to compromise or settle claims. It can, it says, accept stock in the settlement or compromise of a claim.

In July, 1945, Dollar of California received information that the debts of Dollar of Delaware had been paid. Thereupon it and the other plaintiffs in this action made demand for the return of the stock. The Commission refused on the ground that the Adjustment Plan was an outright acquisition rather

(Continued on page 69)

"Paceco cured my rundown condition"

. . . says a prominent San Francisco Bay tugboat



When this tug arrived at PACECO, she was gravely ill. Her hull was fouled by long anchorage and disuse, and she was just a shell of her normal self.

PACECO'S marine engineers looked her over, made a diagnosis, and recommended treatment. Within 30 days, she had been fitted with rudder, engine house, keel condensers, propeller and shaft, and deck house . . . and a shiny new paint job.

She will shortly re-enter the social life of San Francisco Bay, toting a barge here, moving a barge there — enjoying the competition of a large seaport.

PACECO specializes in the design and fabrication of dredges, barges, workboats and marine equipment; is also equipped and staffed to re-work and overhaul tired-out steel equipment.

A call to LAkehurst 2-6100 will bring a PACECO representative to your office.

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Our Past Creates Our Future

So We Salute

Sudden & Christenson's

Robert S. [For Steamship] Norton

Every now and then it comes up along California Street in San Francisco as to "who-all" is the oldest in point of service or the like in the shipping companies . . . so here we present a few facts anent Sudden & Christenson's Traffic Manager, Bob Norton.

He hails from San Bernardino and was schooled in Alameda. In 1906 he was with William "Billy" Sexton at Fireman's Fund, working on the fire losses. In 1912 he started with Southern Pacific in traffic under old-timer H. C. Collins and worked with Jimmy Lowden and Walter Lane. Two years later Bob Norton was over in the District Freight Office on Export and Solicitation. In 1916 he became commercial agent for the Texas & Pacific Railway. A year later he joined W. J. Byrnes & Company, freight forwarders.

When 1919 came along Norton was sent to the Orient by Christenson, Hanify & Weatherwax and he served with this famous import and export house until 1922 in China, Japan and Manila. Returning to San Francisco he was in charge of exports at Fresno for Sun-Maid Raisin Growers for two years.

In 1924 he joined the firm of Sudden & Christenson when they were appointed Pacific Coast agents for the Hamburg-American Line.

There are three Stanford grads to Bob's credit — Bob, Jr., with the Anglo Bank in San Francisco; Ted, an attorney in Modesto, and daughter Nancy. The Norton home is in Los Gatos and Bob's quite a gardener.

As we were saying, "Who-all" outdates Bob Norton in local traffic circles? Let's have the info.

Robert S. Norton, Traffic Manager, Sudden & Christenson

Pioneer Rubber Mills Appoints Sales Mgr.

Virgil H. Greenley has recently joined Pioneer Rubber Mills as their San Francisco District Sales Manager. Upon graduation from San Jose State College, he entered the rubber fabrication business and has been active in that field except for the war years, when he was a lieutenant in the Navy in command of a group of LCTs.

Greenley will direct the sales of Pioneer mechanical rubber products in Northern California and Nevada.

Virgil H. Greenley

(Continued from page 67)

than a pledge transaction.

We are of opinion, upon balancing the conflicting considerations, that the transfer of the shares under the 1938 contract was a pledge. We are led to this conclusion principally by the weight of two considerations: (1) the general equitable character of the transaction and (2) the action of the Commission, at the time, in issuing the new certificates to itself and not to the United States.

It seems plain beyond question that if this transfer had occurred between two private individuals no court of equity would have treated the transfer of the shares as other than a pledge. The details of the transactions are exceedingly complicated, but they are summarized simply. Dollar was a debtor in a sum of $7,000,000. At a time when its financial outlook was exceedingly bad its owners "transferred" to its creditor 92 per cent of its stock. Thereafter Dollar paid off its debt in full.

Because of the power which a creditor has over his debtor, especially a distressed debtor, equity views with considerable skepticism claims by the creditor of rights beyond the right to security and repayment.

The Commission contends that it had power to acquire this stock because it had power to subsidize the company. Its argument in this respect is elusive and indirect. It says that it had power to subsidize, and therefore it must determine the financial qualifications of the company; it might require financial stability, and therefore it might require reorganization; thus it might direct a modification of the creditor rights of the United States, and therefore it had power to take ownership of the stock in exchange for the release of the sureties as part of a reorganization to qualify the Dollar company for subsidy. That is the course of the argument in the brief before us. But, however extensive the statement of the argument is, the unglossed contention is that the grant of a subsidy could be (and was in this case) part of the consideration for the outright acquisition of all the common stock of a company. A more direct contradiction of the terms and intent of the statutes, both those relating to this Commission and those relating to the Reconstruction Finance Corporation, could scarcely be formulated. The subsidy and loan powers there provided were for the rehabilitation of private industry. They were not blinds for Government acquisition of operating industrial concerns. Subsidy is not a synonym for socialization. While it is perfectly true that the Commission could, and should, make all proper and desirable requirements for the protection of Government loans, its power stops at the line which separates the lender from the acquisitor. It could validly come into ownership of stock in the course of foreclosing collateral in the collection of a debt, but it could not acquire outright ownership in the guise of lending money and creating a debt. If the Commission did in fact grant the subsidy and arrange the Reconstruction Finance Corporation loan as consideration for the acquisition of outright and absolute title to full ownership of this stock, we think it exceeded any power granted it by the Congress. We do not think that it actually did so or intended to do so.

The judgment of the District Court is reversed and the case remanded for entry of judgment in accordance with this opinion.

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Rust goes quick and easy with the Arnessen Electric Chipping Hammer. Around corners . . . into deep angles and seams . . . no rust or scale is out of reach with this portable machine and its long flexible shaft. Powered by 32-115 or 230 volt D. C. motor or repulsion-induction, single phase 60 cycle 110/220 volt A. C. motor. Complete servicing at sea or in port.

Write for information of your own specific application.

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It's a Daisy

Determining the GM In Cargo Vessels

(Continued from page 52)

ship to which you are assigned. It will require a few hours of your time to collect the necessary data from the blueprints and put it on small form that you can use every voyage thereafter. You also do away with the necessity of wrestling with the large and unwieldly blueprints, should they not be mounted under glass in your vessel.

First: draw a small-scale profile view of your vessel, showing particularly the cargo, fuel and water compartments. Storerooms should be included, too. This can be placed at the top of a standard size sheet of stationery, about 8″ x 10½″, or larger if you choose. The idea to keep in mind is that you are going to make hectagraph (jelly-roll) copies from the original, so stay within a size that your jelly-roll will accommodate. Below the profile view of your vessel you can draw up, in table form, the Cargo and Fuel, Water and Storeroom spaces by name; leave a blank column in which to insert the number of tons in each; the next column should list the VCG's (from the Capacity Plan) of each of the spaces you have tabulated; next column should be blank so that the Moments(M) of W x VCG may be shown for each compartment. The Fuel tanks may be assigned an extra blank column so that the number of barrels may be shown as well as the number of tons. At the bottom of the columns a Total Weight and a Total Moments may be summed up. The total weight is, of course, the Deadweight of the vessel at that state of load.

In the loading diagram (Fig. 2) I have tabulated the VCG's for each compartment and from the Hydrostatic Curves, picked out the KM values for successive drafts and displacements. The "req'd GM" data is obtainable from the ship-builders of the vessel. This is highly useful so that at any stage of loading or discharging you can refer to this required GM table to find the minimum stability requirements. Notice that the mathematical phases can be simplified by dividing all weights used (including the weight of the Light Vessel, 6653 tons). This dispenses with some small fractions, and does not seriously affect our problem. The diagram used is one for a Diesel-type C2.

The only correction now necessary to the GM, is that for Loss of GM by Slack Surface in the Tanks. The number of tanks which are not full of liquid, and the dimensions of such tanks must be known. Then each tank containing slack surface must be considered as a separate problem. The formula for Loss in GM Due to Slack Surface is

$$\frac{\text{length (of tank) x breadth}^3\text{ (of tank)}}{\text{Displacement of vessel x 420 (a constant)}}$$

(32 x 12 = 420)

—the answer is in feet or in fractions of feet.

For curiosity, use this formula on a vessel of 10,000 tons displacement, having double bottoms 50 ft. in breadth and 10 ft in length; (a) with no fore and aft partitions; and (b) then with five tanks of 10 ft. breadth. This result will clearly indicate to you the value of cellular construction in fuel tanks.

Well now that we are in possession of our GM, let us see if we can use it to foresee the Statical Stability effects that our vessel possesses when she rolls about in a seaway. The means of measuring the power of a vessel to right herself when heeled over is by the length of the Righting Arm. The Righting Arm in feet x the Displacement in tons equals the number of foot tons of Statical Stability the vessel uses to right herself when listed over. The length of the Righting Arm varies with the angle of heel and, of course, with the condition of load. A Curve of Righting Arms is the ideal thing for establishing details, but unfortunately they are not too plentiful in merchant vessels. However, in the graph (Fig 3), you may use the GM, measured on the Righting Arm scale and constructed vertically on the angle of heel of 57.3 degrees (a radian), the angle in circular meas-

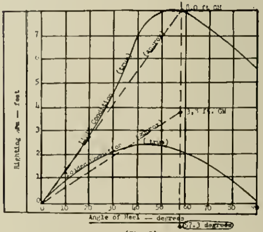

Figure 3.

ure which is unity. Join the uppermost point of the GM vertical to the point of zero Righting Arm and zero angle of Heel. This sloping line coincides almost identically with the True Curve of Righting Arms at small angles of Heel, that is to about 15 or 20 degrees. Beyond that angle, though, little faith should be placed in this method.

In the graph are the true curves of righting arms for a VC2, Victory ship, for light and loaded conditions. In the light condition, fuel and stores are aboard but no cargo; in the loaded condition the vessel is down to her marks. Light GM is 8.0 feet and loaded GM is 3.8 feet. The true curves are indicated by solid lines, and the approximate curve by broken lines.

In the graph, the curves of the Light condition coincide closely, up to an angle of about 15 degrees, and are fairly close up to about 25 degrees. In the curves of Loaded Condition, the coincidence is not so close; however, the approximate curve is well to the safe side, indicating that greater Righting Arms are in existence than are shown by the Approximate curve. The Approximate curve shows a safe margin up to an angle of about 35 degrees, but this should not be taken to mean that all Approximate curves can be used up to that angle of Heel.

The Approximate curve of Righting Arms should be used only to indicate the lengths of Righting Arms caused by heeling of the vessel to angles from zero to about 15 or 20 degrees.

Using the above graph, at an angle of heel of 20 degrees, the Approximate Righting Arm is 1.25 feet. The Dynamic Stability is R.A. x Displ. or

1.25 x 15,000=18,750 ft. tons.

The True Curve of Righting Arms may be plotted, using data from the blueprint known as Cross Curves of Stability. These are seldom made up for all merchant ships' use. I suggest that you contact the ship-builder of your vessel and attempt to obtain this print.

We have covered a goodly portion of the problems of stability to which the merchant mariner is exposed. There is, of course, much more to the subject. Perhaps in the future we may be able to go into the problems incurred in Damage Stability. Hoping that you find this article of interest and of practical value, "smooth sailing", and keep up a good GM.

ANNOUNCING *the opening of our own Pacific Coast Offices on August 1, 1950, and the list of our Traffic Personnel*

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B. B. Conrey, *District Freight Agent*

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YUkon 2-1920
John J. Early, *Assistant Traffic Manager*
Gordon Wake, *District Freight Agent*
Kent Beardsley, *District Freight Agent*
J. B. McQuarrie, *Rates*

PORTLAND, ORE.
Board of Trade Bldg.
Broadway 6541 and 6542
R. D. Eggers, *District Freight Agent*

SEATTLE, WASH.
568 White Henry Stuart Bldg.
SEneca 6460
John Rensklev, *District Freight Agent*

TACOMA, WASH.
Tacoma Bldg.
MAin 7151
Manford McNeil, *District Freight Agent*

WEYERHAEUSER STEAMSHIP COMPANY
PACIFIC COAST DIRECT LINE, INC.

Schorer Succeeds De Lanoy as Holland-America Pacific Coast Manager

J. W. M. (Dick) Schorer, who succeeds E. F. R. de Lanoy as Pacific Coast Manager for Holland-America Line, is a native of Holland, where he was born in 1899. After completing his studies there, and serving in the Dutch Army as a Reserve Officer, he entered the employ of Holland-America Line in 1920. In 1922 he was sent to Havana, Cuba, followed a few years later by transfer to the Company's Mexico City Office, in both of which he was connected with the freight, passenger and operating operations.

Returning to Holland, he was subsequently placed in charge of the Los Angeles Office, and in 1939 was appointed Manager and later Managing Director of the Holland-America Line's subsidiary in the U. K., with headquarters in London, in which capacity he served throughout the war, taking time out in 1945 to inspect the Company's Antwerp and Paris Offices shortly after the liberation of Belgium and France. Early in 1947 he returned to the Head Office in Rotterdam, and later that year was appointed Assistant Pacific Coast Manager at San Francisco, in which capacity he has acted up to the present.

J. W. M. Schorer

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Our 30th Year

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"YORCALBRO" Condenser Tubes
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San Francisco 5

Standard Oil Ads Win Award

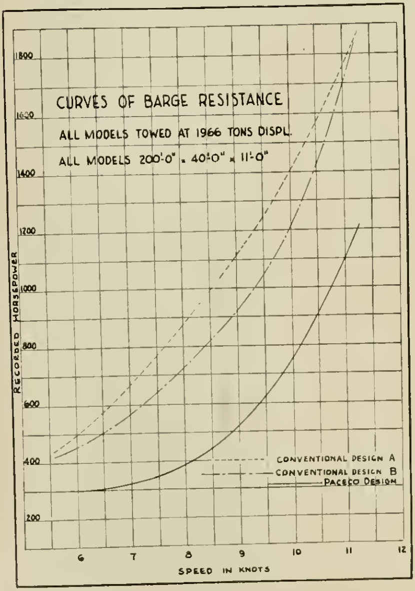
Standard Oil Company of California, in stiff competition with large industrial advertisers throughout the country, recently won a first place award in the National Industrial Advertisers Association competition at Los Angeles.

Standard's "Engineer's Report" and "Engineer's Case File" series of advertisements which appear in this publication, were the unanimous choice of judges in the Petroleum and Coal Products division, and was presented "for the campaign which, in the opinion of the judges is of outstanding excellence in its planning and execution."

The award was presented to F. R. Roper, senior specialist in the company's Advertising Department. Roper is president of the Northern California Chapter of the National Industrial Advertisers Association, and handled development of the winning program.

Marine Industry Brochure by Paceco

For the past quarter of a century a wide variety of harbor and inland waterways vessels of notable quality have been turned out by the Pacific Coast Engineering Company of Alameda, Calif.; and Ray Giles, who is in charge of business development for the company, announces a beautifully prepared brochure describing som of the company's marine products and explains some of the special features of the vessels. These vessels include cargo boats, car floats, towboats, suction dredges, fire boats and many others. Users of the equipment run right through the alphabet from American Dredging Company to Western Pipe & Steel Company, and include the Coast Guard, the Navy, Bethlehem, Kaise Shipyard, and various ports and towing companies. Special features originating with the company's engineer have been built into the various vessels, an example o which is the barge hull design, the superior characteristics of which are indicated on the accompanying curve



◄

Here's how "Minnie" (Paceco's high efficiency barge stacked up in actual tests.

Curve one is conventional design A.

Curve two is conventional design B.

Curve three is the Paceco "Mini-drag" barge in whic the Paceco bow is an important part.

Note the marked superiority in this resistance serie chart of Paceco's "Mini-drag" barge.

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Crandall Rebuilds Railway Dry Dock in Copenhagen

(Continued from page 44)

winches along the docking platforms, but which in the interim are used as fixed blocks.

The cradle moves on free rollers of alloy cast steel, of the relieved tread type, between flat steel shoe plates on the bottom of the cradle runners and similar rails on the top of the three ways of the track. These rollers are assembled in steel frames with renewable malleable iron bushings for the roller pintles. The cradle is hauled by two open link chains of heat-treated alloy cast steel, which, passing around toothed chain wheels (sprockets) on the main shaft of the hauling machine, are connected on an endless system with smaller welded backing chains. The hauling machine consists of a train of steel gears operated by an electric motor of 200 horsepower which will haul a capacity load in 30 minutes.

The hauling machine, hauling chains, rollers, other castings and lumber were shipped from the United States. Messrs. Burmeister & Wain fabricated the steel cradle structure and roller frames.

With this railway dry dock, once a vessel is grounded on the blocks, only two men are required for less than half an hour to have it clear of the water ready for repairs, and a similar period for undocking it—an appreciable saving in time and men over the old slipway. Previously, two days were required to drydock, clean, paint and float a vessel. With the new railway dry dock, this can be done in one day.

Messrs. Poul Lorentzen, A. E. Nellemann and K. E. Gudum-Olsen handled the work for Burmeister & Wain, and I. W. Tourtellot was responsible engineer in charge for Crandall.

Instructions For Smoking in Bed

We recently received another report of a man who fell asleep while smoking in his upper bunk. The cigaret burned his leg, he jumped out in an understandable rush, and injured his ankle when he hit the deck.

We shall repeat the article published here a year ago.

"According to a newspaper story, the following instructions for guests who plan to smoke in bed have been posted in the rooms of a New Jersey hotel:

"1. Call the office and notify the management where you wish your remains to be sent, as it is a matter of record that a very high percentage of hotel fires are caused by this practice.

"2. Notify guests in adjoining rooms of your intention of endangering their lives, so that they may take necessary precautions.

"3. Go to the corridor and locate the nearest fire escape, so that if you are fortunate enough to escape your room you may reach safety.

"4. Now sit down and think how foolish it is for you to take this risk—you may enjoy your smoke while thinking it over." (American Petroleum Institute).

HOW DID YOU GET HERE?
IT WAS AN ACCIDENT

MAGNESITE
LEECO
BITUMINOUS
COATINGS

"LEETOL"
FIREPROOF FLOORS
Approved by U. S. Coast Guard

Magnesite Composition Floors
Mastic Floors
Special Bituminous Coatings
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New Spray Gun

To speed and simplify spray-painting and make it possible to control the width of the "spray pattern" from the size of a silver dollar to a swath more than twelve inches wide, the Eclipse Air Brush Company of Newark, N. J., has developed a new model spray gun embodying a new type of controllable nozzle.

Named the "GAT-2", the new gun features a revolutionary type of four-finger trigger. With the new trigger, says Eclipse, an operator can use the gun for longer periods without finger fatigue. It also enables the user to handle the gun with bulky gloves.

An unusual characteristic permits the operator to project a stream of atomized material in a workable pattern to normally inaccessible surfaces up to 6 feet beyond his reach.

"Target" for spray painting shows accuracy possible with the new Gat-2 with "47" nozzle. The new nozzle's extreme "controllability"—providing a pattern from the size of a silver dollar to one twelve inches across—enables operator to confine his painting within chosen limits.

John Dodds is Jet Speaker

John M. Dodds, famed electrical engineer with the General Electric Company in San Francisco, is much in demand as an authority on jet propulsion and gas turbines.

In his talks, Dodds explains how recent scientific developments have made it possible for jet planes to penetrate the supersonic barrier, and comments on the future use of gas turbines in railroad locomotives, electric power generating equipment, and experimental gas turbines for ship propulsion.

Problem of a New Trans-Isthmian Canal

(Continued from page 39)

shafts, and the tunnel itself for all later operations.

8. Start tunnel excavation from all shafts, beginning at its top level, and carrying the excavation down only to the width of a two-track railway. A complete railway tunnel from portal to portal should thus first be completed. This will reveal a complete and reliable rock profile of the tunnel throughout, and disclose any weak sections which might require protective lining. It will also open an additional route for removing rock material and building up the lateral riprap walls for the protection of the ditch sections of the canal (Fig. 6).* Further blasting operations will be made by under-side stoping in the tunnel bottom and sides, and should not weaken the roof of the tunnel. Lining, if required, can be supplied as the excavation proceeds downward. Electric illumination will be available throughout the tunnel at all times.

Experience in deep mines, even when in weak rock, and observations made over long periods in natural rock caverns, have indicated that falls of rock from the tunnel roof are not to be anticipated.

9. Carry to completion the excavation of the open ditch sections of the canal.

10. The cross-section chosen for the tunnel (Fig. 3) provides a recessed lateral platform on each wall for the tracks of the electric mules used in the propulsion of transiting vessels. This provision is essential for the proper ventilation of the tunnel. It further provides additional room for the wide flight decks of aircraft carriers during transit of the canal.

Without unnecessary delay a precise profile of the line of this proposed canal should be surveyed, and drill borings should be put down within the tunnel section. Until this has been done, no reliable estimate of costs is possible. Purely tentative ones based on an assumed average depth of 120 feet for the open ditch sections (probably a liberal estimate) are as follows: For the 63 miles of tunnel, plus six miles for that number of mile-long tunnel sidings, 171,000,000 cu. yds.; and, for the two open ditch sections, 340,000,000 cu. yds.—a total of 511,000,000 cu. yds. This is roughly half that estimated as necessary to convert the existing canal at Panama to a sea-level canal.

In conclusion, the writer would emphasize as the greatest of all advantages of the Tehuantepec project over the Panama one its very much greater measure of security. General Stratton, for the Committee, has admitted for the latter its vulnerability under bombing attack, but he believes the blocked canal could probably be reopened in a matter of weeks. In a modern war, this period of weeks, during which the canal was blocked to the U. S. Navy, might well spell the difference between ultimate victory and crushing defeat, and if bombed once it is likely that another hit could be effected by the time repairs had been made.

Though it is likely that Mexico would be reluctant to grant a concession for construction of an open-ditch canal, which with its military protective zone would completely sever her territory, the same objection would not be made to one which left a connection nearly sixty miles in width, would bring to her the commerce of the world, and prosperity to a section now largely undeveloped.

A Bill (H. R. 5219) is now before Congress for construction of the Tehuantepec Canal.

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Figure 6. Cross Section of Open Ditch Canal.

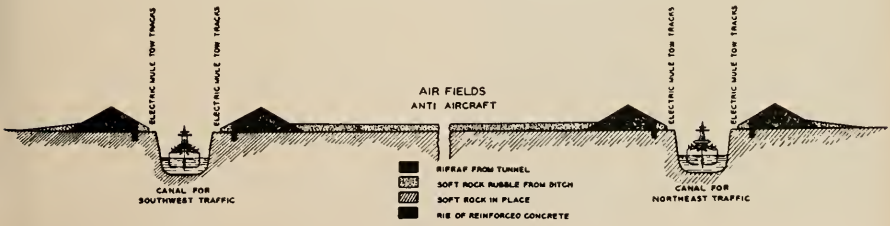

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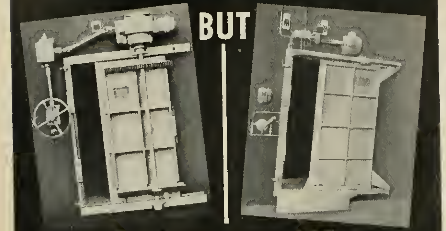
*Fig. 6. Cross-section of the open-ditch section of the canal. Each ditch is for one-way traffic except when the other is closed for repairs. One or more interconnecting semicircular ship channels should be provided on each front to permit of reversing the direction of a vessel or vessels necessary to be taken out.



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U. S. Steel Announces Ship Construction Program

The speed by which private interests can act in getting shipbuilding plans underway is in sharp contrast to the months and years of delay and controversy that are observable in some other directions. On August 1 U. S. Steel announced its intention to build four ore and stone carrying vessels. On August 10 it announced the signing of contracts.

Pittsburgh Steamship Company, U. S. Steel ore carrying subsidiary, announced that two of the ships will be built by the American Shipbuilding Company at its Lorain, Ohio, yards, and the third vessel by the Great Lakes Engineering Works at its River Rouge, Mich., yards. Pittsburgh Steamship Company will also repower two of its other vessels.

The fourth of the new ships is for the Bradley Transportation Company, limestone carrying subsidiary of U. S. Steel, and the contract for this vessel went to the Manitowac Shipbuilding Company, Manitowoc, Wis.

The ore carriers for Pittsburgh Steamship Company will have an overall length of 647 ft., a beam of 70 ft., a depth of 36 ft., and a maximum loaded draft of 24 ft. 6 in. They will carry 18,000 gross tons of ore at a speed of 16½ miles an hour, or 18 miles an hour when light. Ships will be powered by geared turbines of 7,000 shaft HP with oil fired boilers which will have 450 lb. steam pressure at 750° F.

The limestone carrier will be a 666 ft. self unloader with a 72 ft. beam and 36 ft. depth. The loaded speed will be 16 miles per hour and the carrying capacity, 20,000 gross tons of stone at a loaded draft of 25 ft. It will be powered by a 7,000 HP electric drive and will be a coal burner.

The two repowering jobs will also be done at the Lorain yards of American Shipbuilding Company. The power will be geared turbine with oil fired boilers in one of them while the other will be equipped with geared diesel drive.

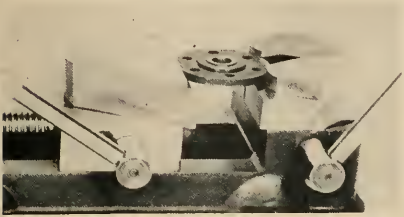
Pittsburgh Steamship Company's fleet of 61 vessels is coal fired and is equipped with radar. Radar, as well as all other of the most modern navigational aids, will be incorporated in the design of the new ships.

De Wilde-Jones, Inc—Swedish Machine Tool Importers

First of a series of machine tools to be imported from Europe for the American market by the new firm of DeWilde-Jones, Inc. is the "Sevo" Universal Screw Vise. This machine can be adjusted to take any shape of material and hold it firmly enough for the machinist to work it. The jaws can be moved in relation to each other, and the height level of the material can be adapted to the requirements and comfort of the worker. For the mounting of easily damageable work pieces, and such as may have or develop spring characteristics, the "Sevo" is just about made to order.

The "Sevo" is a Swedish quality product. Its jaws and pins are made from first-class, hardened Swedish steel, and it comes in two jaw capacities, 2½" and 5".

The DeWilde-Jones firm is composed of Peter H. DeWilde and J. Frederic Jones, former seafaring officers who have used their contacts abroad for the obtaining of agencies for quality machine products. They have set up headquarters at 181 Steuart St., San Francisco.



"Sevo" Universal Screw Vise

Unusual Bulk Carriers

(Continued from page 49)

while it is enroute to a destination via ship, especially where the liquid must be maintained at temperatures within fairly narrow limits to prevent chemical or physical change while in transit. This, combined with the provision of adequate structural strength necessary to handle heavy density chemicals in bulk, was one of the principal technical problems to be solved. While the ordinary oil tanker has been utilized in the past for the carriage of chemicals, its usefulness has been limited as it is unsuited to carry high vapor pressure liquids such as liquified petroleum gas. Still another problem arises when on a bulk chemical carrier it is desired to carry simultaneously a number of different chemicals.

As yet no new ocean-going vessel has been built which has been specially designed as a bulk chemical carrier or to transport liquified petroleum gas. There have, however, been a number of important conversions of large vessels for these special transportation purposes.

Early partial conversions for carriage of liquified petroleum gas were the *Esso Brazil* and *Esso Sao Paulo*. A complete conversion for this cargo made in 1947 was the *Natalie O. Warren*, followed in 1949 by the *Ultragaz*.

Many large specially designed barges of the independent cylindrical tank type for moving corrosive acids and chemicals were built during those years, and in 1949 two ocean-going oil tankers were completely converted to carry bulk chemicals. These vessels are the *Marine Chemist* and *R. E. Wilson*.

The importance of this comparatively new movement of unusual liquids and chemicals by water will be realized when it is noted that twenty-five differing liquid chemicals are now being so transported with the approval of the United States Coast Guard. Incidentally, bulk waterborne transportation is believed to afford greater safety in the movement of large quantities of these liquids.

There has recently been issued by the Central Technical Department of the Bethlehem Steel Company a report on the subject containing much data and many informative illustrations of some of the conversions made in their plants.

The American Bureau of Shipping looks forward to a considerable expansion in this field and its extension to other products which at some stage of manufacture can be transported in a fluid state.

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New Steptreads

A new innovation in non-skid companion way and boarding ladder steptreads has just been introduced by the Shipshape products division of Trident Traders, 1247 Neptune Avenue, Wilmington, California. The manufacturers, making a radical departure from conventional designs, have adapted the unique "Prolong Knot," used on ships since before clipper days, into a steptread that is highly decorative as well as serviceable.

Each one is an authentic replica, cast from actual knots in natural rubber ⅜″ thick. Four sizes are available: Size 1, 5¾″ x 15¼″; Size 2, 5″ x 16½″; Size 3, 4¾″ x 12¾″; and Size 4, 3″ x 11¼″.

"Step-Tread," manufactured by Trident Traders, Wilmington, Calif.

There is a choice of colors, white, or mahogany. They are easily installed by use of brass brads around outer edge of tread, or by use of marine glue between the rubber mats and ladder steps. Dealer inquiries are invited.

Paracoil Evaporators

Paracoil Evaporators, and particularly their conversion to modern low pressure vacuum type distillation plants, are described in a new illustrated Bulletin No. 40A issued by Davis Engineering Corporation, 1064 E. Grand Street, Elizabeth, New Jersey.

This Bulletin includes photographs, cycle diagrams of single and double effect plants, and performance data.

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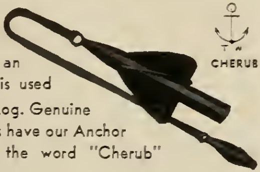

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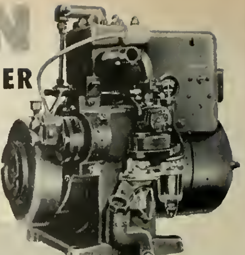

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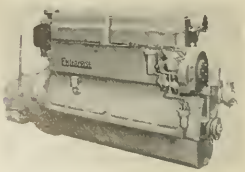
Enterprise Announces Lower HP Diesels

A new series of smaller, heavy-duty marine diesel engines has been announced by Enterprise Engine & Machinery Co., San Francisco, designated the Enterprise M-series Diesels. Built in 3, 4 and 6 cylinder models with 8″ bore and 10″ stroke, these engines range from 68 to 240 HP at medium speeds of 450 to 750 RPM. All models are of the 4-cycle design.

The M-series extends the lower HP range limit of the Enterprise Diesel line from its previous range of 180 to 1755 HP and provides high economies of installation and operation for tugs, tow-boats, fishing craft and pleasure boats.



New six cylinder model M-Series Enterprise Diesel.

They are compact, rugged power plants, designed for continuous, heavy-duty service with a minimum maintenance requirement. They are equipped with standard makes of reduction gears.

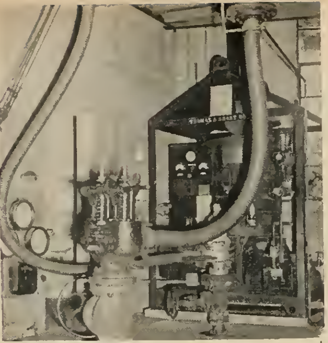
Enterprise M-series diesels are completely enclosed, while all accessories are conveniently mounted for easy accessibility and servicing. Removable inspection covers allow routine checks. Crankpin and main bearing dimensions are of generous proportions to insure long life, low maintenance.

The new Enterprise Bulletin No. M-16 is now available on request.

A Full Throttling Full Flow Valve

A new 200-pound Bronze "W. S." Globe Valve that is claimed to be quite an advancement in valve design is announced by the Wm. Powell Company, valve manufacturers, Cincinnati, Ohio. The outstanding features are the extra high lift of the disc, the exceptionally large flow areas above and below the seat, and the wide nominal pipe size opening through the seat. There is full flow through the seat when the valve is fully open, turbulence is practically eliminated, while pressure drop is cut to the minimum. Renewable, regrindable cone-shaped discs and seats are of stainless steel hardened to approximately 500 Brinell for maximum erosion resistance. Valves are available with screwed ends, and in sizes from ⅛″ to 3″, inclusive.

Bronze "W.S." Globe Valve.



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New, Small Size High Pressure Cast Steel Valves

The Wm. Powell Company announces a new line of small size, high pressure, cast steel valves designed for such services as high pressure steam, boiler feedwater, by-pass, instrument and throttling. Known as Powell Integral Bonnet Valves, they are available in Globe, Angle and "Y" patterns, classes 1500 and 2500 pounds, in sizes ½″ to 2″, inclusive, and have socket weld ends.

One of the outstanding features is the one-piece construction of the body and bonnet, which eliminates the body-bonnet joint and all possibility of leakage at this point. Others are a deep packing chamber, a long disc guide that centers the disc in the seat and prevents chattering in throttling service, hard faced Stellite seat and disc, accessibility of all internal parts, and the ease with which valves can be disassembled, just to mention a few. These valves, together with recently designed small size pressure seal angle and "Y" check valves, are fully described in a folder just issued, a copy of which will be mailed on request to the manufacturer at Cincinnati 22, Ohio.

The following are agents on the Pacific Coast: Los Angeles—Allied Supply Company, 2068 E. 37th St.; San Francisco—General Machinery and Supply Company, 1346 Folsom St.; Portland—Consolidated Supply Company, 139 W. S. Stark St.; Seattle—Palmer Supply Company, 222 Westlake Ave.; Tacoma—American Plumbing and Steam Supply Company, 1908 Pacific Ave. S.

Powell Integral Bonnet Valve.

Nordberg Gasoline Engines In New Bulletin

Publication of an eight page, two-color bulletin describing and illustrating Nordberg Gasoline Marine Engines is announced by Nordberg Manufacturing Company.

Bulletin 143-C details the advance construction features and gives specifications of the three basic, six-cylinder, 90 to 135 HP models of Nordberg Gasoline Marine Engines which are available for direct or reduction gear drives in ratios of 1.88, 2.44, 3.32 and 4.12 to 1.

Also contained in Bulletin 143-C are illustrations of typical installations and cross-section cutaways of the Nordberg STA-NU-TRAL clutch and reverse and reduction gear assembly. A chart gives horsepower ratings at both engine and propeller RPM for direct and reduction gear drive.

Bulletin 143-C is available, free upon request.

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Pacific
MARINE
REVIEW

SEPTEMBER 1950

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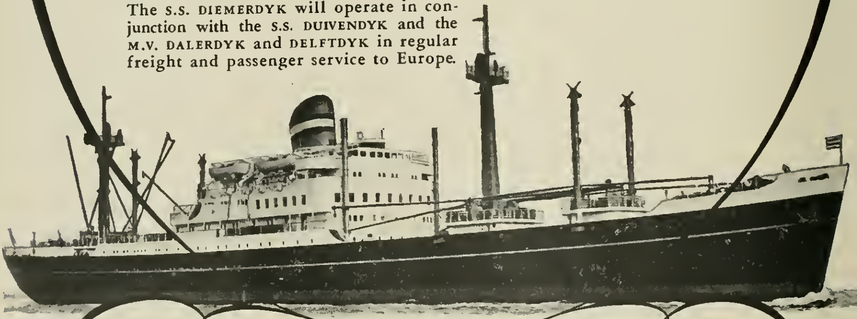

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"IT'S GOOD TO BE ON A WELL-RUN SHIP"

Pacific
MARINE
REVIEW

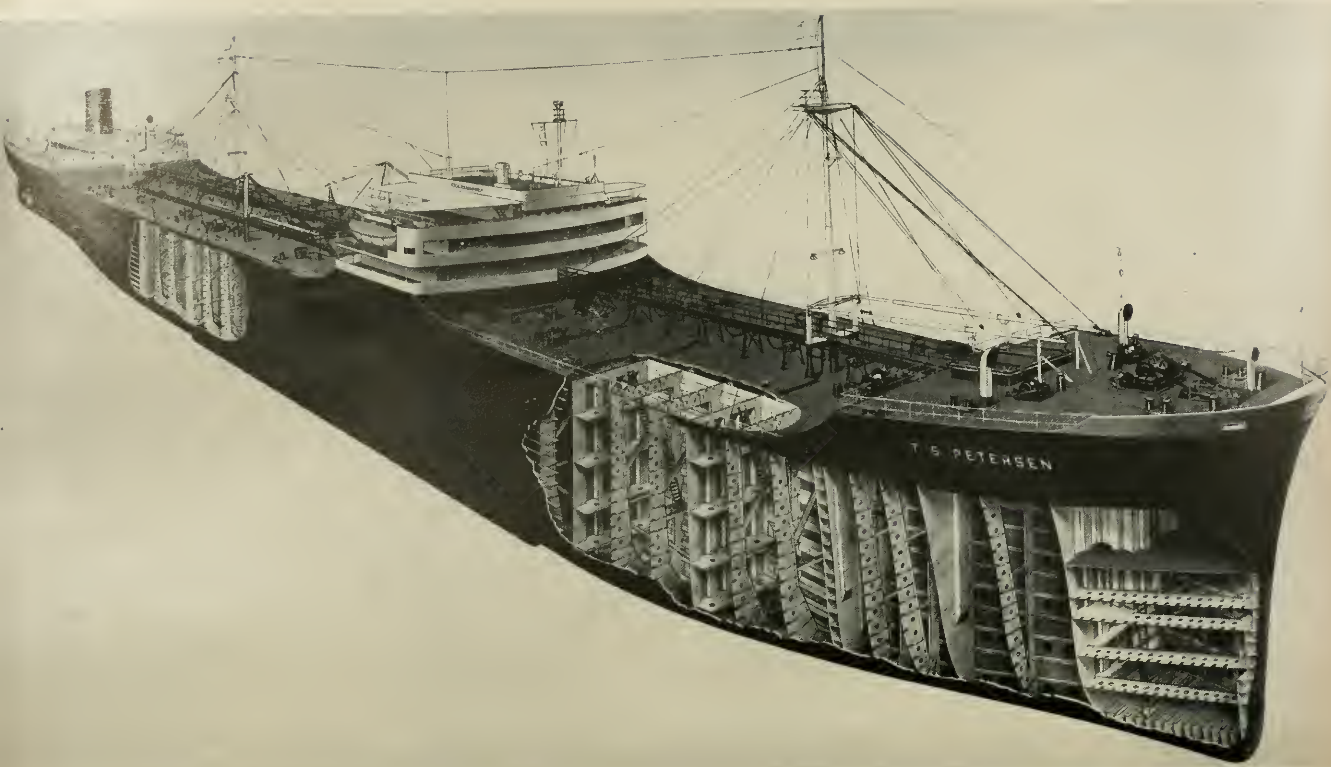
Radar is a Life Saver; Let's Make the Most of It

THE importance of marine radar is being exemplified as dramatically through *failure to use* its remarkable powers as through the actual use of them. We have vivid accounts of great success with radar instruments, in which innumerable accidents have been averted and uncountable days and hours saved, and on the other hand such a tragic occurrence as the sinking of the hospital ship *Benevolence* which adequate use of radar almost certainly could have averted. True, there is no present requirement in law that ships' officers use these instruments of protection or have them at all; but having the installation and failing to use it places the ship's officers on the defensive, and just as the *Morro Castle* fire brought about great changes in ship construction and in the training of ship personnel for fire protection, so the *Benevolence* disaster should bring to bear sufficient force of public and maritime opinion that radar and all other forms of protection at sea *will* be available and be used. When there is no equipment, or insufficient equipment, there should be no time lost in providing it. If one radar set is not enough to assure continuity of service then there should be two sets, as is the case with ice-breaker vessels in the North Atlantic. A ship should no more be permitted to sail without modern and adequate radar than without a compass—or a rudder.

Mothballs are for Moths . . .

IT is not through the wisdom of hindsight that the American people are demanding to be told why, with the world in jeopardy, our Navy was in mothballs. As mighty ship after mighty ship was laid away, few informed people outside of our remarkable Defense Department under Johnson could fail to be fearful that under a peculiar definition of economy the Navy's striking force of both ships and air arm was being taken out of service, and a substantial part of its funds used for competitive manufacturing enterprises in Navy Yards, and in cargo fleets. These activities have been "justified" in order that the Navy might be "ready." *Ready for what?* The Navy's readiness should be for defense, not for a nifty manufacturing or freight handling job. Its ships should be roaming the seas in danger zones, and not packed away "where moths and rust doth corrupt".

And as for the Navy Yards, the American people expect that they be constantly building and planning newer and better *combat* ships, rather than serving as warehouses in which the first line of defense is kept as incapacitated as even an enemy could make them, while the Nation's armies retreated.



More than twice the length of a football field, the new tankers are 624 feet 7½ inches long, 84 feet wide and have a depth of 44 feet, displacing 36,460 tons of salt water when loaded to draft. Their size rivals that of many passenger liners. Aids to navigation include radar, depth finder, automatic steering devices and radio direction finder. Tanks extend length of ship under deckhouse to pump room bulkhead aft. Forward tanks are part of liquid capacity of 10,100,000 gallons. Tanks, in bow, hold fuel or ballast. Drawings on these two pages furnished through the courtesy of the Standard Oil Bulletin, and were prepared in the office of M. J. Ryan, Naval Architect of San Francisco.

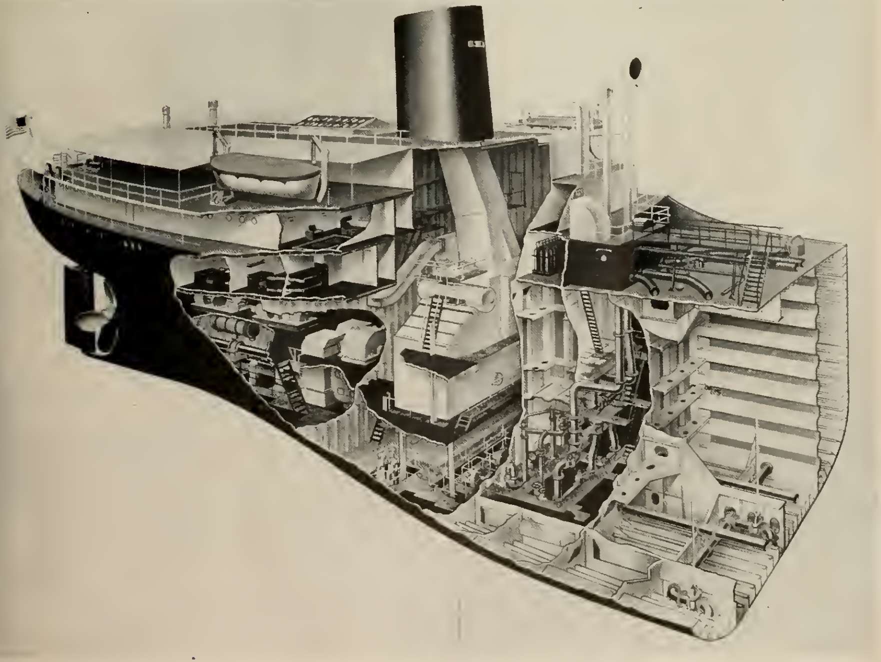
Interior Arrangement of the New Tankships

TANKERMEN, when asked about their ships, sometimes describe them by saying, "You take a long bunch of tanks, tie them together, put a motor on the back and some rooms on top—and you've got a tanker!" This is, of course, a humorous simplification for the landlubber, and also quite true—as far as it goes. How far it falls short of the full truth is demonstrated by these drawings, which show in detail the design of the five new tankers being built for Foreign Tankship Corporation. A modern tanker is one of the most intricate and highly specialized vessels in the entire field of ship design and construction, and Naval Architect M. J. Ryan has come up with the striking drawings on these pages. They have already appeared in color in the "Bulletin", monthly publication of the Standard Oil Company of California.

The program of giant tanker construction, undertaken by a number of major oil companies several years ago, is now well on the way toward completion. Five of the 28,000 ton ships are for the Foreign Tankship Corporation, a subsidiary of Standard Oil Company of California, and are being turned out by Bethlehem's Sparrows Point yard. The first to reach the launching stage was the *T. S. Petersen* on April 11; the second, the *Atholl McBean,* was launched July 21, with the *A. N. Kemp, Paul Piggott,* and *Robert Watt Miller* still to follow in September, November and December.

These great ships will have nearly twice the deadweight tonnage of the T-2's 16,000, and will carry the volume

Crew quarters in aft section are of a high standard. Officers' quarters are in midship deckhouse (opposite page), with captain's cabin on top deck behind wheelhouse and chart room (round windows). Propeller is four-bladed, solid cast manganese bronze, 22 feet in diameter, weighing 58,500 pounds. It turns at 103 revolutions per minute at full speed. Engines are steam turbines developing 13,750 shaft horsepower, driving the ship at a top speed of about 17 knots. Pumps are centrifugal and turbine driven, are capable of discharging cargo at rate of 20,000 barrels an hour.



Into the water, a massive tanker hull glides from end of the launching ways of Bethlehem yard.

of 1,000 tank cars, a train eight miles long. They are 624′ 7½″ long, with a beam of 84′ and a draft of 33′ plus.

Because the tanker is a distinct type of vessel, with conditions of stability and displacement in a different category from those of other types, the doubling of the deadweight and greatly increasing the overall dimensions on a great fleet of ships indicates, as we pointed out at the time, long range vision and adventurous designing.

The 28,000 tonners,—and the others of 26,000, 30,000 and 32,000—are undoubtedly the prelude to a new era in tanker operation. And to the building of more large and fast—very fast—ships for defense purposes. A speed of 28 knots is being discussed, as against some 17 knots for the present program and about 19 knots for the Cimarron class.

This displacement of the 28,000 ton ships (or 28,360 to be exact) is about 36,460, made up, in addition to deadweight, of some 6,855 tons of steel and outfitting, 855 tons of machinery, and 390 tons of cargo piping, heating coils and cargo pumps. The liquid cargo capacity is 240,000 barrels, the bunker capacity 28,692 barrels, and the dry cargo capacity 25,000 cubic feet bale. There are two longitudinal bulkheads and 30 tanks, the longest of which is 40 feet. The ships are 95% welded.

There are four main centrifugal cargo pumps located in one pump room aft, operated by steam turbines, with a maximum total capacity of 20,000 barrels per hour, and there are four 14 inch suction and four 14 inch discharge main lines. Four reciprocating stripping pumps have a capacity of 2,856 barrels per hour through six-inch suction or discharge lines.

In the Foreign Tankship vessels rhe propelling machinery is Bethlehem geared turbine with a maximum of 13,750 shaft horsepower through a single 22 foot propeller at 103 rpm. The two main boilers are Babcock & Wilcox, water tube, with superheaters, desuperheaters and air heaters.

Big Ferry Down The Ways!

The ferry boat *Joseph F. Merrell, Jr.,* built for the City of New York by Bethlehem Steel Company's Staten Island Yard, was launched August 19. Rated as the largest, fastest and safest harbor ferry ever built, the "*Merrell*" will be able to transport 3,000 passengers and 38 to 45 vehicles per trip. She will have a speed of 18 miles per hour and will be fully equipped with modern navigating aids, including radar. The vessel has an overall length of 290 feet and beam of 69 feet compared with an extreme length of 260 feet and beam of 66 feet for the present ferries on the New York to Staten Island route.

Port Radar for San Francisco

Sperry Equipment Tested by Marine Exchange

THE importance of protection to shipping in the approaches to San Francisco Bay during periods of limited visibility took on dramatic importance last month with the fatal sinking of a Naval hospital ship just outside the Golden Gate. Hopes and plans of the maritime industry for added protection for this area are almost at the culmination point,—plans for a port radar control system which could, and almost certainly would, have averted the collision which sank the *Benevolence.*

The port radar system is the ambitious proposal of the Marine Exchange and the Sperry Gyroscope Company. Sperry's harbor radar is already in successful operation in the ports of Liverpool and Long Beach, and their trial installation at San Francisco, under discussion since 1947, should prove beyond dispute that every port worthy of the name should provide this safety for its fleets.

The Marine Exchange is again proving its farsightedness in advancing the plans for San Francisco Harbor, even though the installation is only on a test basis for a six-month period. For it will have uses beyond the expectations of even most radar enthusiasts. These uses are roughly those of particular value to port authorities and those of value to shipping generally.

Fred Galbreath, President of Marine Exchange, under whose progressive administration the Marine Exchange is now one of the most advanced experiments in harbor safety ever made.

The principal functions of port radar of direct use to port authorities are:

To provide a means of exact and continuous observation of all shipping within the main port area and approaches thereto;

To enable port officials to observe and check the positions of all floating navigational marks, and to afford instant warning of any displacement of those marks from their positions;

To give the earliest possible information as to the location of any shipping casualty;

To keep the port official responsible for dockings, etc. accurately informed of the movements and progress of vessels desirous of docking, and to enable him to gauge correctly their prospects of "saving the tide;"

To advise the pilot vessels on station of the approach of all ships requiring their services;

To enable the port health authority and others to be better informed as to the movements of inward vessels.

To shipping generally, the following summarizes the principal services which the port radar can render:

Under certain weather conditions, masters of vessels may hesitate to commit themselves to navigating the channels in the absence of knowledge as to the number, location, and movements of other vessels in those channels. The port radar station can provide them with the necesary information. It must not be considered, however, that harbor radar is intended to provide the means wherby vessels can navigate the channels and river of a port, in all weather conditions. Its purpose is to provide certain necessary information to vessels which will enable them on many occasions to avoid delays they would otherwise have experienced.

Vessels requiring to dock or undock under certain weather conditions want to know the disposition of other vessels in the area adjacent to their particular dock, before attempting to navigate that area. Their own radar may not be able to supply that information, owing to the location of the vessel in relation to others, and also owing to obstructions in the form of dock sheds, cranes, vessels, etc. The required information will be obtainable upon request from the radar station, which has a much more favorable and unrestricted view.

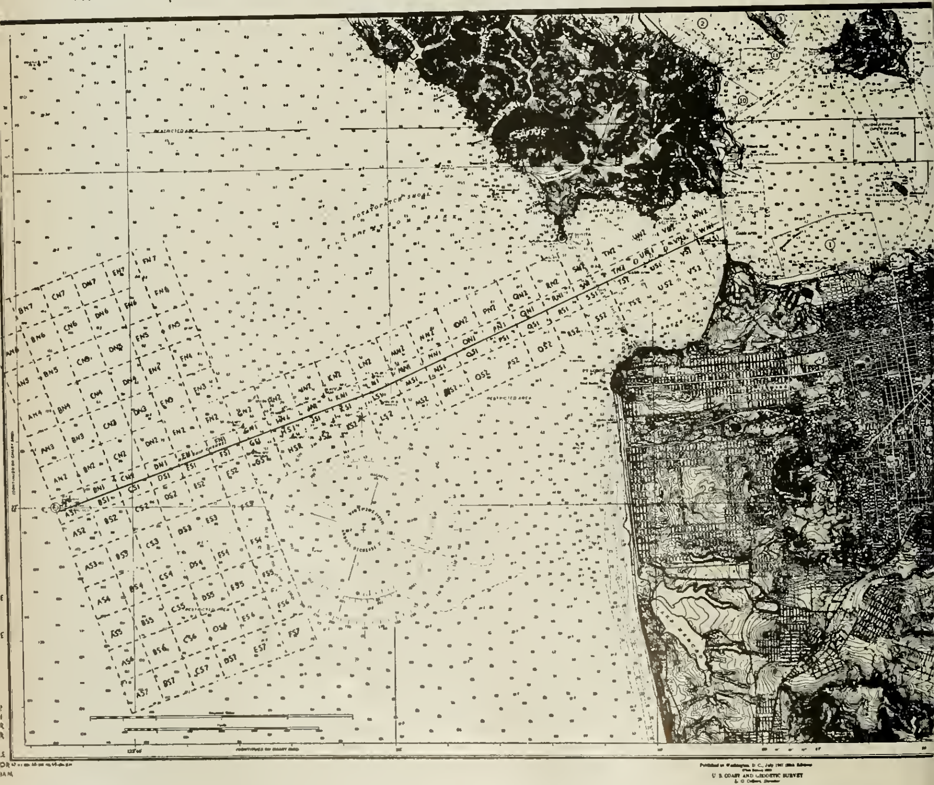
It will assist vessels in calibration of their direction finders. In thick weather, vessels are unable to fix their position in relation to that of the calibrating station with sufficient accuracy. This relative position can be given from the radar station. (It must be noted that an integral part of the port radar scheme is the "ship-radar station" radio-telephone service. This is operated with the aid of portable radio-telephone sets which are embarked with the pilots; it has proved successful in Liverpool for several years.)

It is stressed that in no way are the vessels to be "radar controlled." Sole navigational control of the vessel remains with the bridge. The port radar station provides information to those in charge of vessels, thereby contributing to their navigational safety and to the avoidance of delay.

The vicinity of San Francisco Bay is geographically complicated. There are two channel approaches to the Bay entrance and after passing through the Golden Gate, traffic moves in several directions: inside or outside of Angel Island, north or south of Treasure Island and Yerba Island, across the Bay to Oakland and Alameda, and directly to the San Francisco piers. This is all in-bound, and there are corresponding out-bound routes. Then there is north-south traffic between the north bay, rivers and Richmond and the San Francisco-Oakland area; and the east-west traffic between Oakland and San Francisco. And there is a constant overlay of yachting and fishing boat activity, for there are yacht clubs entirely around the Bay perimeter.

During certain times of the year the approaches to the Bay are densely fog-bound, and this fog rolls in through the Golden Gate and often covers the whole Bay area with occasional "tule" fogs that originate in the delta region to the east and north. The U. S. Transport docks,

The Pacific Ocean approach to San Francisco Bay. The gridded area spans the deep-water channel westward from the Golden Gate Bridge which is indicated by the vertical line separating San Francisco from the Marin County shore in the map. The Marine Exchange radar station is located at the south or lower end of the Golden Gate Bridge. This is the highest spot on the San Francisco shoreline as far as it appears in the charts on these pages. The sinking of the hospital ship "Benevolence" occurred at a spot somewhat shoreward from the star appearing in the section K-52.



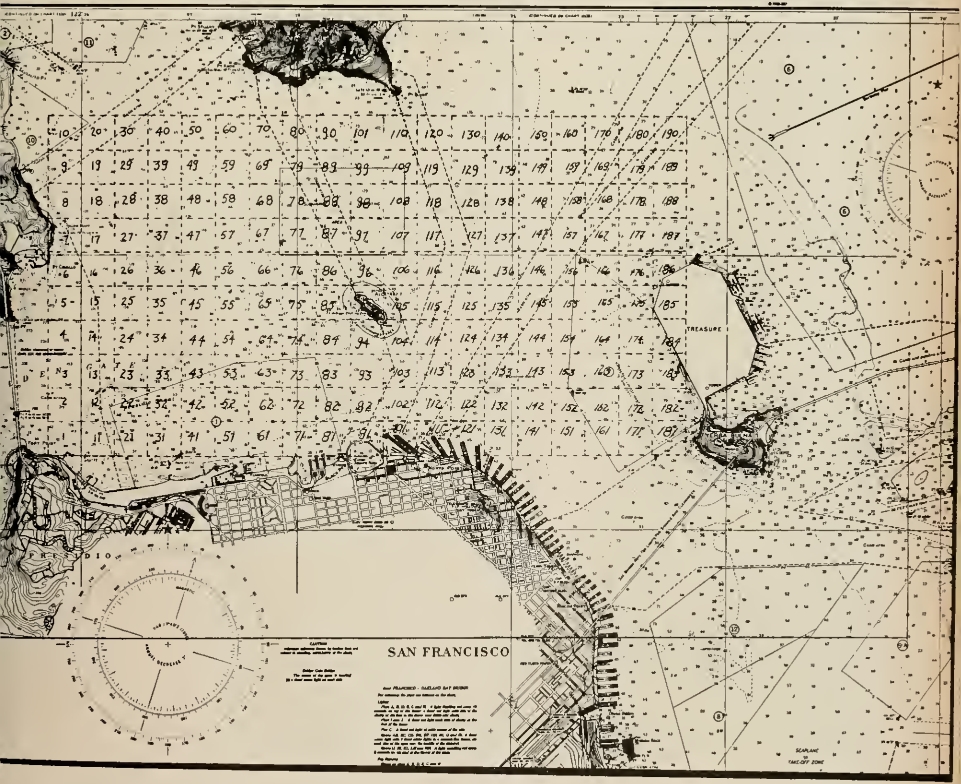
Fishermen's Wharf, the Foreign Trade Zone, the Yacht Harbor, and the beginning of the line of piers are on the San Francisco shore line and require a cross-current approach, which serves to obstruct the main channel frequently during each day and night. In addition, the quarantine inspection anchorage is there so there is no limit to the number of precautionary measures that should be taken for traffic safety, while not to be forgotten is the fact that "rules of the road" are not the same for inland waterways as they are at sea.

The Golden Gate Bridge touches the high point on the Presidio shore and from this point a broad expanse of the ocean, including the main channel to and beyond the Lightship some 15 miles southwest, comes into view. A building at this point was obtained for the Sperry installation, and a system of gridding the whole visible channel area was drawn up, so that a pilot on a vessel entering the port under complete overcast conditions could be informed of his exact position by radio telephone. It was within this area that the Navy's Hospital Ship *Benevolence* was rammed and sunk last month.

On the harbor side of the station the view is unobstructed from the Golden Gate Bridge almost to the San Francisco-Oakland Bridge, and with the exception of the ferry lane and the south-of-Treasure Island area, nearly all bay shipping is brought under observation. The grid system has been drawn up for this area also. Both grids are pictured on these pages.

Tests were made of the equipment beginning September 13. When the service is in full operation and shipping people are fully informed of its value, the Marine Exchange will have provided a service of incalculable value to safety, and to time saving in the Port of San Francisco.

Through the use of special walkie-talkie equipment which the pilot takes aboard and which operates on a specially allocated wave length, there can be continuous communication between the Marine Exchange station and the pilot. The chart of the channel area shown gridded on these two pages permits the precise locating of a vessel in the radar scope and the pilot can be informed of obstacles along his route. The Marine Exchange radar station is at the lower left in the picture, and is located in San Francisco's Presidio. The scanner from this point shows, in addition to the channel marked on page 36, the area east from the Bridge. Center top in the chart is Angel Island, dead center is Alcatraz and to the right is Treasure Island and Yerba Buena Island.



The Liners —

"Mariposa" and "Monterey"

WHEN war broke out in 1941, the Matson passenger fleet was the finest on the Pacific. The ships went to war, and war took its toll. Only the *Lurline* is back on its old route after a restoration expense of two and a half times its original cost. The *Lurline* is still the fastest ship on the Pacific, and so would be her sisters, the *Mariposa* and *Monterey*. Now with war upon us again, Congress is taking action that it is hoped will bring them back into service.

It is something of a reflection on the maritime industry that it must tie so much of its plea for existence on national defense. Surely this great industry—this important segment of the American economy—can justify its own development. While it has been on more than one occasion sacrificed to war effort, like the Tommy Atkinses of Kipling's poem, they're a "thin red line of 'eroes when the band begins to play." It was in the war effort that the *Mariposa* and *Monterey* achieved their greatest usefulness, and it was through the war effort that they were lost to the Line. A suggestive part of the war record of these ships will appear at the end of this article. Their defense importance should now be recognized as an element in their restoration.

The *Mariposa* and *Monterey* were built for Oceanic Steamship Company, wholly owned subsidiary of Matson, at Bethlehem's Quincy yard and launched in 1931, entering service early in 1932. They are 631 feet 6 inches long, with a displacement tonnage of 26,141 and gross of 18,170. Deadweight is 11,300. Passenger capacity is about 725, and wartime troop capacity is 3850 to 4150. The speed is 22 knots.

Today only two first class passenger ships comparable with the *Mariposa* and *Monterey* and with a speed of 20 knots or more and other superior characteristics of capacity and performance are operated commercially in the American Merchant Marine. They are the *America* and the *Lurline*. The performance of the *Mariposa* and *Monterey*, sister ships of the *Lurline*, during the war demonstrated their importance to national defense. Their cruising radius of 23,000 miles and a speed of 22 knots, together with their refrigerated cargo capacity, 34,629 cubic feet, enabled them to make long voyages and to serve most ports throughout the world.

If converted fully to *Mariposa* plans, these two partly reconverted ships would meet all the requirements of Government regulations, have air conditioned passenger and crew quarters and be equipped with evaporator plants capable of supplying all their fresh water requirements, even in wartime.

The President's Advisory Committee on the Merchant Marine appointed by President Truman, stated in its report of November 1, 1947, that the *Mariposa* and *Monterey* are suited for complete reconversion and recommended their prompt completion and return to service.

Potential Use as Transports

Recently developed plans for hurry-up completion of the two ships as transports and their acquisition by the Maritime Board or the Navy, through the Military Sea Transport Service are along the following lines:

The number of installed berths would not necessarily be the same as the total number of troops to be carried since it is customary in emergency transports to use the "hot berthing" system in which rotational sleeping is resorted to. During World War II the *Monterey*, with but 4,000 berths installed, actually carried up to 6,800

The "Mariposa," one of three 22 knot speed queens of the Pacific, on the Oceanic run to Australia.

troops on numerous voyages. Because of the removal of the interiors it is probable that as many as 4,500 berths could now be installed permitting 7,000 or more troops to be carried in emergencies.

The main engines and auxiliary machinery of both vessels have been completely rebuilt equal to new. Although some have been reinstalled, a considerable number of units are stored ashore and are ready to put in place. These would vary little from the arrangement contemplated for the luxury liner with the probable exception that the elaborate air conditioning plant would be omitted and ordinary blower fans of high capacity would be substituted. The huge evaporator plants for making fresh water from sea water, which were purchased originally to permit an abundance of fresh water for all passengers and crew, will come in very handily for use in transports since it would be possible for the ships to sail indefinitely without the necessity for stopping to take on fresh water. Naturally with 7,000 troops instead of 700 passengers there will not be the same abundance of water; but there will be ample for all necessary uses. This feature the ships did not have during World War II, and at that time their capacity and steaming radius was limited by the amount of fresh water which could be carried in tanks. The amount of refrigerated cargo space has also been substantially increased; and when the new refrigeration machines are installed and the chambers properly insulated, each ship will be able to carry 65,000 cubic feet of refrigerated materials (the equivalent of 10,000 normal size domestic refrigerators).

Finally, it will be necessary to install the navigational, communication and defense items which will permit the vessels to operate safely in dangerous waters. Such standard navigational items as the gyro compass, radio direction finder, etc. are already on hand and can be easily installed; but the Defense Department will undoubtedly wish to add military types of radar detection and identification devices, much of which will be of a portable or semiportable nature.

In their present condition it is possible to complete the above work on the *Mariposa* in about 2½ months and on the *Monterey* in about 3 months at a cost of about $3,000,000 and $3,500,000 respectively.

Had the two ships already been completely converted like the *Lurline* the peacetime interiors could be ripped out, and the vessels fitted for emergency wartime service in a matter of about a week.

Mariposa and Monterey in the War

Mariposa

December 7, 1941, found the *Mariposa* in Sydney harbor on her regular run, preparing to sail for San Francisco on December 11. She then set out alone on a circuitous route for San Francisco, arriving unannounced the morning of December 30 after a run of 13 days, 15 hours and 47 minutes, in which she averaged 20.42 knots.

By January 12, 1942, she was fully converted, with permanent accommodations for 3,851 troops, and sailed for Melbourne with 4,550 aboard. In the same convoy were the S.S. *President Coolidge* and the S.S. *President Monroe*. She returned unescorted, with 14,756 bales of wool.

On her following round trip to Melbourne, the *Mariposa* returned with 690 evacuees from the Netherlands East Indies—Airmen and Army men and their families.

On May 8 she sailed for Charleston via the Canal, picked up 3,813 soldiers for Karachi, India, via South Africa. From Karachi to Bombay to New York. Then to Liverpool with 4,068 soldiers, which were replaced with 3,987 from Glasgow for Oran for the invasion.

On December 21 she left Newport News on a 110-day, 41,000-mile voyage including Rio de Janeiro, Aden, Suez, Djibouti, Bombay, Capetown, Glasgow and New York. Subsequent trips were made to Liverpool and Casablanca, Glasgow and Bombay, Rio and Sydney, Mar-

The "Monterey," like her sister ship, the "Mariposa," was a 22 knot speedster on the Pacific.

The "Mariposa" and "Monterey" as they appear at present, resting, half demolished, at a pier. The "Mariposa" is 65% completed and the "Monterey" 35% completed. No work has been done on them for several years.

seilles and Wellington, and on and on across the seas to a total of 414,000 miles. Although under frequent air alarm she escaped unscathed and with no operational troubles—a fine tribute to her sturdy construction, her speed, and her splendid handling under Captain William R. Meyer.

Monterey

At noon on December 3, 1941, the *Monterey* was officially chartered to the U. S. Maritime Commission under demise charter, and subchartered to the Army. She had just arrived from Sydney on December 1, and as in the case of the *Matsonia,* plans had been made to do as much conversion to troop transport use as possible before sailing to Manila on December 8. Only "C" deck was left intact by December 7, with permanent accommodations installed for 2,950 passengers. Considerable cargo for Sydney and Manila had already been loaded when news of the Pearl Harbor attack came.

The *Monterey* was immediately relieved of her cargo, and reloaded with plane parts and other vital war material. She sailed with the *Matsonia* and *Lurline* for Hawaii with 3,349 soldiers and other men aboard, on December 16. She returned with 804 Army casualties and dependent wives and children; 240 of this group were under twelve years of age. Upon arrival in San Francisco, the *Monterey* was sub-chartered to the Navy. She proceeded to San Diego, where she and her sister ships embarked a capacity load of Marines for Pago Pago.

For a year the *Monterey* trooped the world's oceans. But on November 2, 1942 she joined one of the huge armadas for the North African invasion, one of several such trips.

Back to San Francisco, then New York and again to Liverpool, Gibraltar and Naples, where while under attack by German planes she undertook rescue work for a stricken ship, the Grace liner *Santa Elena,* and took 1675 survivors aboard, said to be one of the greatest rescues in history—peace or war.

To New York and to Honolulu and back and forth across the Pacific for three years, then to France for the troop return. Except for a temporary grounding in a dense volcanic dust cloud near Milne Bay, there were no navigational accidents and the great service of this ship under Captain Elis R. Johanson will live in maritime annals.

The trooper "Monterey" in 1943. As the "Santa Elena" sank in the Mediterranean, the "Monterey" took aboard 1644 survivors. This is said to be the greatest rescue operation in history.

Painting by Lieut. Hunter Wood, famous marine artist.

Holland-America Line's Luxury Passenger-Freighter *Diemerdyk*

THE *Diemerdyk* is the first new vessel for the Holland-America Line to be launched and completed by the Dutch shipyards since the war. The keel was laid by Wilton-Fyenoord, Schiedam, Holland, January 4, 1949.

The principal dimensions are:

Length overall	498′6″
Length between perpendiculars	475′4″
Maximum beam	69′
Gross tonnage	11,195

Frederick R. Wierdsma, general manager of the Holland-America Line for the U. S., Canada and Mexico.

Net tonnage	6,303
Speed	16½ knots
Shaft horsepower	8,500
Revolutions per minute	85
Passenger capacity	61

Cargo capacity—555,000 cubic feet, including 139,000 cubic feet of refrigerator space.

The *Diemerdyk* contains six cargo holds. 'Tweendecks Nos. 2, 3 and 4 are especially equipped for the carriage of cooled and frozen cargo at temperatures ranging from 15 degrees above zero (Fahrenheit) to 5 degrees below. All non-refrigerated cargo areas are equipped with Cargocaire installations for the control of temperature and humidity.

The vessel is fitted with twenty cargo booms ranging in capacity from five to fifty tons.

Fire-fighting equipment includes a Kidde smoke-recording apparatus and CO_2 fire extinguishing installations in all cargo spaces, engine room and boiler room.

Main Propulsion

Consists of a General Electric cross compound turbine developing 8,500 shaft horsepower. There are two D-type Foster-Wheeler oil-burning boilers developing a boiler pressure of 465 lbs., with superheated steam at 750° F. (See following article).

General Arrangement

Officers quarters are located on the navigating bridge deck, on the boat deck, and on B deck.

Public rooms are situated on the forward half of the

The "Diemerdyk" outward bound from her home port of Rotterdam on her maiden voyage to New York.

promenade deck, with the exception of the dining saloon which is on B deck.

Passenger cabins are on A and B decks.

Dining Saloon

Located on B deck, forward, seats 65 and is paneled in French walnut with small decorative friezes above the serving buffets. Chairs are in contrasting light-toned wood, upholstered in rough-textured modern fabric. Gay floral print curtains add touches of color. A bronze and glass partition separates the dining saloon from the B deck foyer and is embellished by a bronze figure by Dick Stins representing "Storm, Wind and Water."

The Lounge—Smoking Room—Bar

Located on the promenade deck forward, starboard side, as are the adjoining smoking room and bar. The paneling here is Cuba wood, Honduras mahogany and aspen while bookcases and entrance doors are of dark calamander wood. The lounge and smoking room together form an L-shaped room, with deep, comfortable built-in settees and numerous tables and armchairs. The intimate bar seats six persons. A section of the hand-loomed carpet is removable to permit dancing.

The Drawing Room

Located on the promenade deck forward, port side, is entirely separated from the smoking room and lounge and is furnished with comfortable settees, chairs, tables and writing desks. Adjoining is a small veranda opening onto the glass-enclosed promenade deck.

Passenger Cabins

The *Diemerdyk* has 31 spacious cabins accommodating one to three passengers each. All are outside and all have private baths or showers, and have individually controlled forced ventilation. Of special interest are four semi-luxury cabins located on A deck forward. These staterooms, each of which features a sitting-room alcove, large private bathroom and three spacious wardrobes, were designed by Salmonson & Boudon of Amsterdam and offer refinements unusual for passenger-freight vessels. All cabins have wall-to-wall carpets, bureau-desks of a new design, and bright-colored upholstery of specially loomed French fabrics.

Route of the Diemerdyk

The *Diemerdyk* was especially designed for the Europe-North Pacific Coast service of the Holland-American Line in which she will operate between European ports and the Panama Canal, Los Angeles, San Francisco and the ports of the Pacific Northwest. Her initial voyage to New York, Boston, Philadelphia, Baltimore and Hampton Roads is in the nature of a "shakedown" trip following the completion of which she will enter her regular run as the new flagship of the company's North Pacific Coast fleet. Running mates of the *Diemerdyk* are the m. v. *Dalerdyk,* s. s. *Duivendyk* and m. v. *Delftdyk.*

Fare

The *Diemerdyk* carries one class only. Minimum fare on her return voyage from New York to Antwerp and Rotterdam (sailing July 26) will be $310. Minimum fare in the North Pacific Coast service San Francisco/Los Angeles Harbor-Europe will be $455; from British Columbia and Pacific Northwest ports, rates are $40 higher.

J. W. M. Schorer, Pacific Coast Manager, Holland-America Line.

"Diemerdyk" Accommodations Are Exquisite

Above: Veranda on the "Diemerdy

Left: Bar on the "Diemerdyk."

Below: Plan of glass enclosed Prom
nade Deck, with direct access to a
from the Veranda and Bar shown
above photos, and to the Drawi
Room and Lounge beyond them.

KEY

A and C - BEDS

P - PULLMAN BERTH

▭ - WARDROBE

▯ - DRESSING TABLE

▭ - BATH

▫ - WASH BASIN

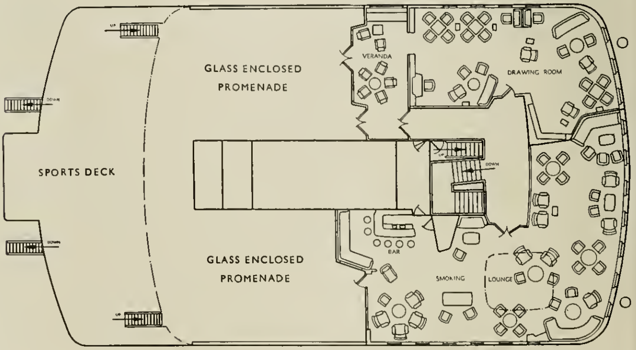
▫ - TOILET

☼ - SHOWER

▫ - TOWEL DRYER

~ - CURTAIN

▪ ELECTRIC HEATER



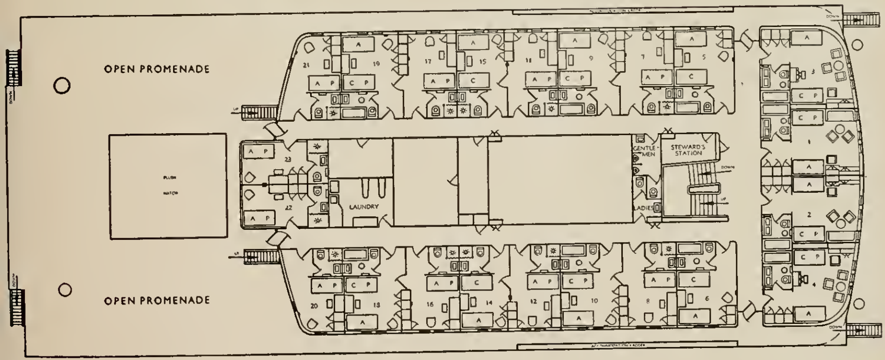
Left: Located on B deck, forward, the Dining Saloon on the "Diemerdyk" seats 65 and is paneled in French walnut, with small decorative friezes above the serving buffets.

Crew's quarters are as up-to-date as the rest of the ship. Rooms are furnished with armchairs and are for single or double occupancy only. The life-saving equipment, including lifeboats, rafts and ladders, ate of aluminum.

s a de-luxe passenger-freighter *Diemerdyk* is probably the theosis of her type. The fine kmanship in her exquisite pub- apartments and the thirty-one acious staterooms, all outside with private bathroom facilities accommodating a total of sixty- passengers, furnishes ample evi- ce that neither Netherlands builders nor ownets have lost ir skill and reputation for the y best that modern ship construc- n and design can provide.

Right: One of the four front cabins on the "Diemerdyk."

Below: Plan of A-Deck showing stateroom arrangements.



"Diemerdyk"

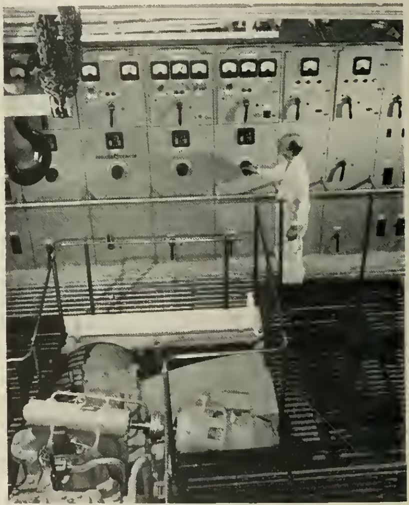
Has General Electric Turbine Foster Wheeler Boilers

THE 11,195 gross ton passenger-freighter *Diemerdyk* will enter North Pacific service in September.

Main propulsion of the *Diemerdyk* is provided by a General Electric cross-compound turbine developing 8500 shaft horsepower. Steam is supplied by two Foster Wheeler D Type oil-fired marine steam generators each consisting of a boiler, waterwalls, superheater, and economizer. Each steam generator is equipped with fuel oil burners, combustion control, soot blowers, and smoke indicator.

Each steam generator has a normal full power pressure of 465 psi at the superheater outlet and a final steam temperature of 765° F. Total heating surface of each steam generator, including waterwall and economizer, is 9072 sq. ft., and the normal superheated steam capacity of each is 37,500 lb. per hr. Each furnace has a volume of 1040 cu. ft.

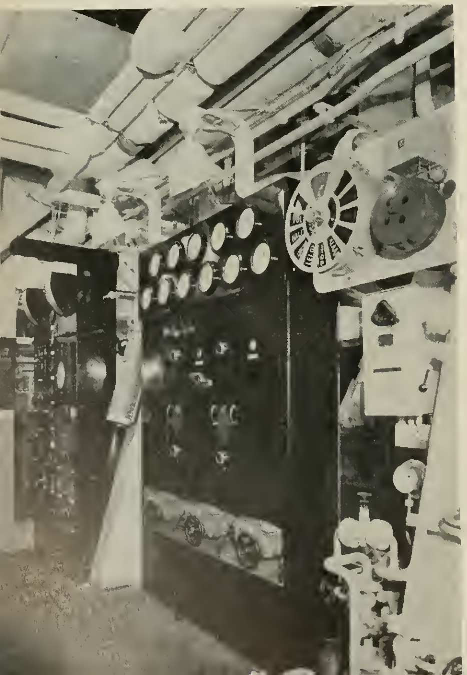
The propulsion set consists of an 8-stage 6159-RPM, high pressure turbine, and an 8-stage, 3509-RPM, low pressure turbine, connected through flexible couplings to a double reduction gear. The corresponding propeller speed is 85 RPM, and its direction of rotation for ahead propulsion is clockwise viewed from the after end of the ship. The set is capable of developing a maximum of 9350 HP, at which load the propeller speed is approximately 88 RPM. A two-stage reversing element is included in the forward end of the low pressure turbine.



The control board of the "Diemerdyk." In the foreground is the turning gear motor.

Steam is admitted at the forward end of the high pressure turbine, flows aft to the crossover connection, and from the crossover forward through the low presure turbine, with exhaust downward to the athwartship condenser.

Steam flows from the boilers to the turbine gear set through a maneuvering valve manifold that contains a steam strainer, an ahead valve, an astern valve, and an astern guarding valve. In addition to the ahead valve,



◀ The General Regulator Combustion Control Unit and panel assembly on the "Diemerdyk," showing pressure regulator and air volume regulators in opening below panels.

steam admission to the ahead turbine is further controlled by a governor valve included in the maneuvering valve manifold, and by three hand valves at the high pressure turbine ahead of the first stage nozzles. Steam to the astern turbine is controlled directly from the astern guarding and astern valves included in the manifold.

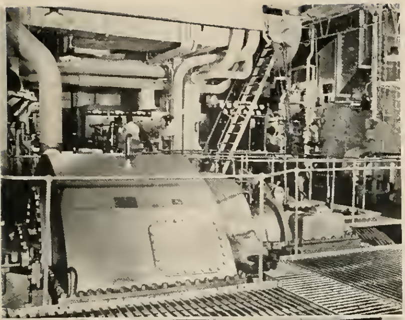
The astern turbine is located in the exhaust end of the low pressure ahead turbine casing. It has two stages, the first wheel having two rows of buckets and the second wheel having one row of buckets. An efficient deflector is provided to prevent the impingement of steam from the astern turbine on the last row of the ahead blades, and vice versa.

The casings of the high and low pressure turbines are made of steel, and are split at the horizontal centerline. The interstage nozzle diaphragms are held in recesses machined in the casings and are split at the horizontal joints, so that the upper halves of the diaphragms are lifted with the upper halves of the casings.

The governor system operates by means of oil pressure, and prevents the turbines going beyond ten per cent over normal speed. The governor pump is driven from the forward end of the low pressure turbine shaft.

For normal conditions, the high pressure and low pressure ahead turbines deliver approximately equal power to their respective pinions. Each turbine is connected to a solid, nickel steel high speed pinion through a double-ended flexible coupling of the toothed, high speed type. Each high speed pinion drives an intermediate gear and shaft, flexibly connected to a hollow, nickel steel low speed pinion, through which the intermediate shaft is passed. The two low speed pinions drive the low speed gear, which is solidly coupled to the propeller shaft. All gears and pinions have double-helix construc-

(Continued on page 93)



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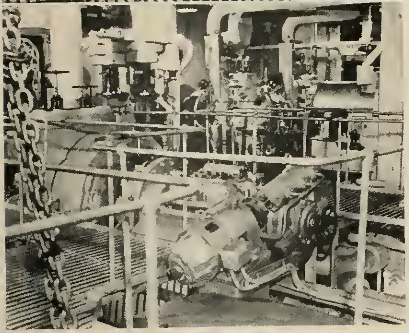
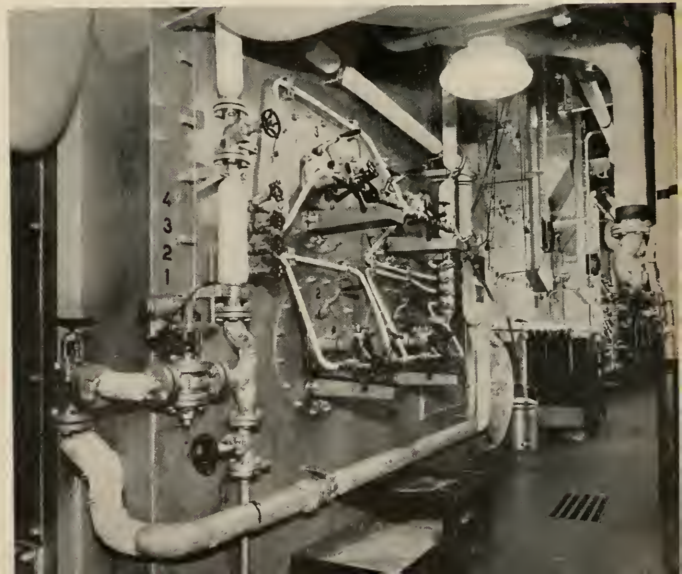
Top: View in an engine room to starboard showing low pressure element of G-E 8500 HP propulsion steam turbine-gear unit.



Bottom: Same installation as above, with high pressure turbine element and turning gear in foreground.



►

Firing aisle on the "Diemerdyk," with port boiler in foreground, showing the four fuel oil burners per boiler and part of the lower drum. Automatic fuel oil return-pressure regulating valve is directly below the vertical numerals.

Varying Safety Requirements For Tuna Clippers

By DAVID W. DICKIE

IN the January and February 1948 issues of the *Pacific Marine Review* an article was published outlining the Tuna Clipper Saftey Requirements and the reasons for them in each case. The difference between the Rules of the American Bureau of Shipping, the Rules laid down in the Load Line Regulations, and the Safety Requirements of the Tuna Clipper as outlined in the Bulletin dated August 1, 1946, and the latest features that have been added from experience, will be given here.

The rules of the American Bureau of Shipping are based on the strength of the structure of the boat and the freeboard below which it is not allowed to operate. Needless to say it is not possible to operate a tuna boat at the freeboards given in the table and the strength of the wood boats can hardly be expected to equal a steel boat of the same dimensions.

The Load Line tables formulated in London in 1930 give the freeboard for vessels down to 80 feet long, and for vessels less than 80 feet long the intention was that the freeboard should be increased. The table reads;

Length Feet	Freeboard Inches	Length Feet	Freeboard Inches
80	8	120	12
90	9	130	13
100	10	140	14.2
110	11	150	15.5

It must be understood at the start that the freeboard tables as such specifically do not apply to a fishing boat; nevertheless some form of freeboard is applicable to the problem or the boats would sink.

Take the boats having wells for stowing cargo; if all the wells are filled with salt water the boat would sink, yet at the same time where all the wells are filled with dry fish there is sufficient freeboard. The reason is that where the wells have been filled with water and fish, and subsequently the cooling water is pumped overboard—there is a saving in weight of 18%, or in other words the dry fish weigh 82% of the water and fish that were in the well previously. The facts are that notwithstanding the absence of the applicability of the Load Line tables—they were taken into account when the rules were made.

In the following discussion of the rules, the numbers refer to the latest arrangement of the Safety Requirement rules.

No. 1 Hatches

Hatches on the bait wells to have a permanent coaming at least 18" above the deck or higher, if the surveyor considers it necessary, and fitted with covers. (Covers may be insulated if desired by the owner.)

The conditions of assignment of Load Lines require that the hatchway coamings on freeboard decks are to be at least 24" above the deck. Coamings are to be of steel and are to be substantially constructed. In the case of tankers, which these vessels really are, the hatchways on the freeboard deck are to be closed watertight by efficient steel covers. There is no requirement for any specific height but the covers have to be operable from above and below.

As stability was the governing factor and the pocketing of air in the bait wells was causing concern, an effort was made to circumvent the trouble by raising the height of the hatches to reduce the free surface area when a bubble of air released itself from the well and caused the water to drop to the point where it ran out of the hatch.

The actual height of the hatch as it applied to the previous paragraph was from the under side of the beam instead of from the deck as the under side of the deck was ceiled to form the top of the well. The beams were 5½" deep and the ceiling was 1¾", a total of 7¼" below the deck. This enabled us to cut down the height of the hatch from 24" to 18" and still be safe, and met the objection of the fishermen to the high coamings of the hatches. The Master was instructed not to empty a well on one side without emptying a well on the other side and the underwriters were willing to take the risk.

No. 2 Hatches

Hatches on the brine wells, where flush, to have metal covers. (May be insulated if desired by owner.)

The fish are dropped into the water in the well as they are caught and the water spills overboard as the fish displace the water thereby eliminating free surface excepting the small area of the hatch itself. Since these boats really are tankers and the hatchways on the freeboard deck are closed watertight by efficient steel covers bolted down, the Load Line requirements are met.

No. 3 Hatches

Alleyway hatches to have a coaming at least 24" above the deck and fitted with a watertight cover.

In this case we have a definite requirement of the Load Line Regulations without any justifying circumstances to the contrary. The deck has no ceiling below and the height has to be measured from the deck. In one case where the hatch was built of steel and the cover was fitted with a locking device that could be operated from the under side and the top side, it was accepted at 23" above the deck.

No. 4. Hatches

All other openings in the deck to be fitted with watertight metal covers.

This was a precaution to eliminate water getting below into spaces needed for flotation and is a requirement of the Load Line regulations.

No. 5. Scuppers

Scuppers to be cut through the bulwark between every frame where possible, from a point forward of the galley to a point not less than 14 feet from the stern. Length of scuppers to be 75% of the distance between frames and of the following heights:

Boats 125 feet long and over, 3½" high;

Boats 100 to 125 feet long over all, 3" high;

Boats 65 to 100 feet long over all, 2½" high;

Boats 65 feet long and under, 2" high.

If the owners elect not to install freeing ports, scuppers must be provided with an area of at least 25% greater than the combined required scupper and freeing port area.

The latter produced the best arrangement of all for wood boats, which is practically a continuous opening all fore and aft through the bulwark, about 7" high fitted with closing flappers. If water came on deck it had a chance to get overboard and when a sea washed against the outside of the bulwark the flapper closed and kept the deck dry. However, the previous arrangement is hardly suitable for a steel boat where all construction has to conform to steel boat practice.

No. 6. Freeing Ports

The standard Freeing Ports are 12"x12" but may be made any equivalent area. The following freeing ports are required.

Boats 125 feet long over all and larger, six freeing ports on each side.

Boats 100 to 125 feet long over all, five freeing ports on each side.

Boats under 100 feet long over all, four freeing ports on each side not less than 8"x9".

Where a vessel is fitted with a space on the Main Deck enclosed by watertight doors abreast of the bait boxes and freeing ports are made so they will open with not more than 4" of water on deck at the deepest place, the freeing ports can be used as scuppers in the enclosed space.

The Load Line Regulations accept scuppers that pass down through the deck and out through the side, having an automatic non-return valve (and cast iron is not to be accepted for such valves; they must be made of brass). There does not seem to be any specific number of these scuppers required, but in place of them the freeing ports are specified in great detail. Hinges of freeing ports are to have brass pins.

The minimum freeing port area on each side of the vessel is that given by the following table:

Length of Bulwarks in Feet	Freeing Port Area in Square Feet
15	8.0
20	8.5
25	9.0
30	9.5
35	10.0
40	10.5
45	11.0
50	11.5
55	12.0
60	12.5
65	13.0

Above 65 ft. add 1 square foot for each additional 5 ft. length of bulwark.

Take a modern tuna boat of say 121 feet long over all, 28 feet beam. The well upon which the freeing port area is based is from a point 14 feet from the stern to the wing athwartship door which is a distance of approximately 70 feet. The 14 feet at the stern is on account of the fact that scuppers and freeing ports aft of this point do more harm than good as water runs in on deck due to the wave formation. The mean width between the bulwarks due to the round of the side is 26'-9" and the total area of the deck is 1872.48 square feet. The area of the spaces that are not to be included are:

Galley	346.50
Bait box to 14 ft.	268.12
Bait well hatches	184.17
Alleyway hatch	12.59
Total	811.38

This leaves 1872.48 — 811.38 = 1061.10 square feet which is 56.67% of the total deck area. The total length of the "well" is 70 feet which means 14 square feet of freeing port area multiplied by 56.67% = 7.9336 square feet total freeing port area.

According to the Tuna Boat Rules, boats 121 feet long require 5 freeing ports on each side—plus 25% if scuppers are omitted making a total area of 6.25 square feet. 6.25 square feet divided by 7.9336 square feet = 78.78%. The requirements of the Tuna Boat Rules are only 78.78% of the requirements of the Load Line Regulations.

At present practically all of the boats have adopted freeing ports instead of scuppers and to get adequate area they have been made 13" wide by 14½" high in the clear, giving an area of 1.30 square feet each. Five freeing ports 1.30 square feet each give 6.50 square feet, which is equal to the requirement of the Tuna Boat Rules. Some scuppers are fitted for drainage only.

No. 7. Door in the After End of the House

Where a door leading to the Engine Hatch is in the after end of the house adjacent to where fish cargo is worked, the sill is to be at least 24" above the deck.

This arrangement is seldom used now. The fish used to get through the door and down into the engine room and there was also constant danger of men falling into the hatch to the engine room.

No. 8. Door at Raised Deck

Where a vessel has a raised portion at the forward end of the Main Deck, the door in the side of the house is to be at least 8" forward of the after end of the raised deck. The door is to be in halves and the sill at least 8" high.

The arrangement that prompted this rule is not used now. It was on account of the door to the Engine Room that was placed immediately aft of the forecastle.

(Continued next month)

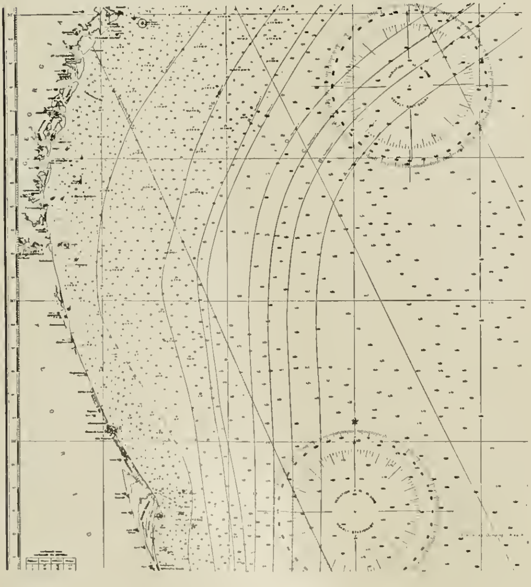
Using the Gulf Stream to Speed Coastal Time

Loran Used in Survey

CHANCE observations made in the Gulf Stream more than a year ago by W. R. Griswold, captain of Sperry Gyroscope's laboratory vessel, M/V *Wanderer,* have led to a comprehensive survey of the Stream's characteristics. Sperry, in a recent report, reveals that seven companies operating tankers equipped with loran are participating in a survey sponsored by the Hydrographic Office and Coast & Geodetic Survey. It is expected that the survey will produce knowledge of the Stream heretofore impossible to obtain.

Sperry's initial interest in the use of loran to study the Gulf Stream's current began aboard the *Wanderer* in April of 1949. Rounding the tip of Florida and heading north from a Gulf of Mexico demonstration cruise, Capt. Griswold used loran to take frequent fixes and thereby sail in and out of the narrow stream of maximum current of the Stream and take note of its effect upon the vessel's speed.

This special chart prepared by the Hydrographic Office for the tanker survey of the Gulf Stream contains five northbound and three southbound tracks for tankers to follow and log pertinent navigation data.



This electronic navigation device, enabling frequent accurate fixes day-or-night within a matter of minutes, made it possible for the *Wanderer* to effect a saving of eight hours time in a three-day run from Florida to a point off Cape Henry, Virginia. Capt. Griswold believed that this use of loran as a time-saving tool in the Gulf Stream was unique in the annals of navigation; he also recognized that his data pertained to one voyage only, and therefore could not be conclusive.

However, his log did show that in certain areas where the *Wanderer* had been kept in the charted axis of the ocean current, the vessel's speed had increased from a normal cruising speed of 9.8 knots to 13.6. Officials at Sperry decided that further investigation of the possibility of a narrow high-verocity current was called for. Therefore, with the cooperation of the Esso Shipping Company, a Sperry loran was installed aboard the tanker S. S. *Esso Concord* which regularly sails the Gulf Stream route. Following installation, Capt. Griswold made the first voyage with test results that bore out what had been observed previously on the *Wanderer.*

During the autumn of 1949 the U. S. Navy Hydrographic Office and the U. S. Coast and Geodetic Survey were informed of the observations being made. A plan was formulated by these agencies whereby data from loran-equipped tankers sailing the coast is collected and sent to the agencies for evaluation. This "Tanker Survey of the Gulf Stream" is currently in progress. Sperry reports that in addition to Esso Shipping Company, the following tanker fleets have installed one or two loran receivers for survey and evaluation purposes: The Texas Company, Sun Oil Company, Trinidad Corporation, Mathiasen's Tanker Industries

W. R. Griswold charting a fix obtained aboard M/V "Wanderer" by means of the deck-mounted Mark 2 loran shown at right.

Inc., Atlantic Refining Company and Keystone Shipping Company.

At the end of each voyage every tanker in the survey turns in a log of loran or other fixes, engine rpm, weather, state of sea, sea temperature, barometric pressure and standard dead-reckoning speed. All vessels participating use a specially prepared Coast and Geodetic chart 1002 and Hydrographic Office chart number 0943. These have overprinted sailing tracks, five northbound and three southbound. The tracks taken in rotation by any one vessel, range from one on the charted axis to others at selected distances on either side. The southbound tracks are for a study of countercurrents.

Aided by the frequent fixes obtainable with loran, the survey is expected to reveal a wealth of data regarding the nature of the Gulf Stream, its variations and the strength of its current. Sperry is in hopes that predictions can be made as to where the greatest effect may be found by seasons. Officials believe that such information might easily save loran-equipped vessels enough time to enable them to make at least one additional trip per year.

Capt. Griswold points out that the tanker survey will be concerned generally with the stream south of Cape Hatteras. To the east of Cape Hatteras considerable work with loran in the Stream has been conducted by the Woods Hole Oceanographic Institute. Technicians at the Institute, by drifting and continuously recording loran fixes, have detected currents up to 5 knots in strength and 3 to 5 miles in width. Logs indicate that there is a considerable shift of the axis in this area. Commercial operators would therefore have difficulty in establishing a route where they would benefit from a maximum current. However, they could easily determine when they were stemming such a current and quickly get out of it.

In any event, the surveys currently being employed in the Gulf Stream will undoubtedly be of interest to oceanographers and mariners the world over. They will certainly serve to resolve the many differences of opinion which have existed regarding the nature and effects of this warm ocean river.

The tanker "Esso Concord," operated by the Esso Shipping Company, has been evaluating Sperry loran in Gulf Stream navigation for almost a year.

The World Shipping Pool
The Work of the WSA

By GEORGE L. WILLEY
Major, Transportation Corps, U. S. Army

EDITOR'S NOTE: The historical background of the Army Transportation Corps and the World Shipping Pool appeared in the first part of Major Willey's article in the April *Pacific Marine Review*. A further installment will follow shortly relating directly to the Army Transportation Corps, followed by one on Military Sea Transport Service.

THERE were five major accounts for whom ships, controlled by the War Shipping Administration, carried goods during the war. They were the Army and Navy, the Lend-Lease Program, civilian exports needed by Allied nations and the program established by the Department of State, and the Foreign Economic Administration shipments to Latin America and other countries. Each was essential to win the war.

WSA-controlled ships carried the bulk of the lend-lease cargo. In 1942 it carried 39% of all lend-lease shipments and civil requirements; 1943, 53%; 1944, 62%. In 1943 WSA ships made 2,876 sailings with lend-lease supplies.

The WSA, under lend-lease or charter, transferred 509 vessels to serve under allied flags. This act was part of the world shipping pool program. Dry cargo exports in WSA ships for both the lend-lease program and civilian commodities totaled 10,242,000 long tons in 1942; 16,221,000 in 1943; 16,485,000 in 1944; and an estimated 21,733,000 in 1945. Tanker exports in the same categories amounted to 4,246,000 in 1942; 6,370,000 in 1943; 13,874,000 in 1944, and an estimated 9,389,000 tons in 1945.

American imports during the war amounted to 70,652,000 tons of dry cargo and 35,118,000 tons brought in by tankers. In 1944 WSA-controlled ships brought in about 73% of our total receipts.

The War Time Fleet

The rapid growth of the U. S. merchant fleet was the primary reason for WSA's ability to meet war tonnage demands. When we entered the war, our fleet totaled about 900 dry-cargo vessels of 6,700,000 deadweight tons, and some 440 tankers of 5,150,000 deadweight tons.

By the end of the war the WSA-controlled fleet was 4,221 with a deadweight tonnage of 44,940,000. At the end of 1942 there were 1,639 ships; by 1943, 2,847; 1944, 3,744. Most of this fleet was acquired by construction.

The U. S. Maritime Commission had been created in 1936 and had established the national phases of our merchant shipping and shipbuilding. The Commission spent much study in bringing from the drawing board, ships that were emergency type cargo, but could carry the load, and this took the Maritime Commission its full time at war. The WSA was created to control the operation, purchase, charter, requisition and use of ocean vessels of the U. S., except those under military control and some domestic waterborne services under the Office of Defense Transportation.

Prior to the WSA, cooperation by ship operators in military transports was primarily on a voluntary basis. The war called for government control, so the WSA was created. Under this plan the private companies, as operators, acted as agents of the WSA.

WSA responsibility also included repairing, arming, and installation of defense equipment, conversion to troop transports or hospital ships and other special purposes. It trained and provided ship personnel, the operation, loading and discharging, and control of movement of ships under guidance and cooperation with the Transportation Corps.

There was always a need of more ships. Every ship was used to the maximum. There was an ever-present effort to find new loading methods. Decks were used, surplus fuel was carried in deep tanks, and under-deck space previously not used, was made available. Every conceivable idea was utilized not only to save space, but ship turn-around time as well.

Special notice was given port areas to prevent port congestion — a World War I trouble which had freight cars and supplies jammed up for miles out of New York City.

Port officials helped to solve these problems. The WSA entered into coordination with them, ODT, the Army Transportation Corps and the railroads, barge, truck and terminal operations. WSA also controlled a number of deep sea terminals and this coordination helped solve the problem of the flow of supplies. In 1944 44,805 carloads, or 123 cars per day were delivered in New York alone.

The WSA operating officials met with those of the British Ministry of War Transport and the Transportation Corps to solve these problems. Cargo was kept going to ports throughout the United States, at the same time ships were kept at a regulated turn-over. It was a tremendous job. Efficiency in handling the WSA fleet was complicated by poor storage facilities in Europe and the Pacific area. Great distances in the Pacific slowed the turn-over. Hastening the ship turn-around in port helped a little.

The Joint Chiefs of Staff directed the Army and the Navy to maintain complete records of activities of U. S.-controlled merchant vessels as well as other merchant vessels in the theaters of war. Copies of ship activity reports submitted weekly by each theater or area commander were given to WSA showing, by port, the daily activity of each vessel. All these figures and information helped the control of Allied shipping, and after the war became valuable from the research standpoint.

Maintenance, repair and conversion of the WSA fleet was a huge job as well as a mandatory operation—This work, in fact, ranked second only to our construction of a Merchant Marine fleet. WSA not only repaired our own huge fleet, but most of the United Nations pool of ships. A division of Foreign Repairs & Salvage Operations in overseas ports was maintained. To coordinate the function with similar naval operations, an Office of Coordination for Ship Repairs & Conversion was set up in New York to work jointly for Navy and the WSA. It directed work to over 100 repair yards in the United States.

WSA Troop Carrier Program

The troop carrier program alone called for conversion of 400 vessels by the WSA Maintenance & Repair Organization. This totaled $290,000,000 in costs. There were similar jobs done on foreign vessels. The WSA Repair & Maintenance Organization handled more than 42,000 jobs at a cost of $1,480,087,000. Of this 36,476 jobs were for WSA, while 5,600 jobs were on foreign vessels.

The WSA fleet during the war consumed over 300 million barrels of all types of bunker fuel from all over the world. To feed seamen on ships it took 1,812,000 tons of food from February, 1943, to January, 1946. This included restricted foods only supplied by WSA.

Besides merchant ships, the WSA service fleet at the end of the war consisted of 48 sea-going tugs of the V4-M-A1 type; four miscellaneous types, four coastwise tugs, 37 harbor tugs, and 50 other small craft from barges to derricks.

There were about 55,000 merchant seamen and officers in 1941 in the United States fleet. A program established by WSA developed a personnel system under a Deputy War Shipping Administrator, which provided a peak sea-going force of 250,000 men. The U. S. Merchant Marine Act of 1936 had been a fortunate enactment for this nation. This was carried on under three organizations: the U. S. Merchant Marine Cadet Corps; the U. S. Maritime Service; and the State Maritime Academies under federal supervision.

From 1938 to 1945 they graduated 31,986 officers; 7,727 radio operators; 150,734 unlicensed seamen; 5,034 junior assistants; pursers; hospital corpsmen; 2,588 junior marine officers for the Army Transportation Corps; 36, 620 from deck, engine and steward upgrade schools. Many other special schools made a grand total of 262,474 graduates under WSA training.

Administration

In the administration of WSA affairs we find an organization composed of officers recruited from commercial companies. A division of foreign service was established to coordinate overseas activities. Many functions came under the Organization for Fiscal Affairs, supervised by a deputy administrator. These included compensation to vessel owners following ship requisition; concurrence in charter parties; contracts; and agreements relating to revenues, expenses, freight rates, insurance, foreign charters and other fiscal controls. Total net obligations and disbursements by WSA chargeable to its various appropriations from February, 1942, to June, 1945, amounted to $7,581,917,854.

The WSA had its busiest month in December, 1945, which recorded over 1200 sailings against 800 during the war high. Reason was final liquidation of wartime military operations and increased relief to foreign nations.

Conversion of cargo ships to troop transports to bring our men home was a huge task itself. The troop fleet was composed of 546 vessels. It operated in a common pool of WSA, and Army and Navy vessels, and by the first of December, 1945, brought home 3½ million men. From V-E Day to V-J Day practically the whole troop-return responsibility was on WSA ships, which accomplished better than 85% of troop return by September, 1945. The remainder for the most part was carried by British vessels.

The Merchant Marine can well be proud of the part it played in World War II—another war when amphibious cargo support played a major role to victory.

Next: The Army Transportation Corps

Export Liner Lifeboats Unsinkable

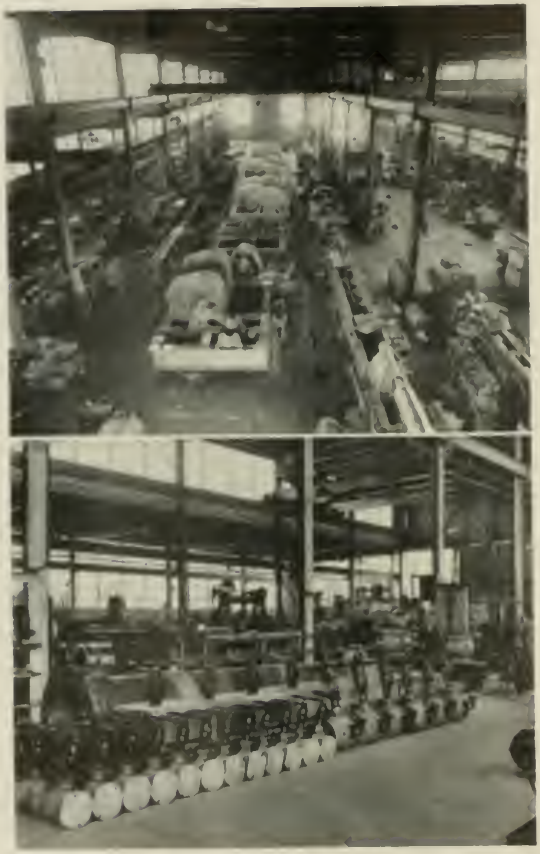
Each lifeboat of the new American Export liners *Independence* and *Constitution* will have nearly three times the human capacity of Christopher Columbus' flagship, the *Santa Maria,* when he discovered America in 1492.

The complement of the *Santa Maria* was only 52 men. Each lifeboat of the new liner will carry 150 passengers, greater than the capacity of any other lifeboat in the world. In addition to being made of aluminum, the dozen water-tight compartments in each will render them unsinkable.

The new lifeboats are manufactured by the Marine Safety Equipment Corporation, which is also furnishing special gravity davits to handle the boats. The boats are 36 ft. 6 in. long and 12 ft. 6 in. wide. Four of them are motor equipped.

"There is hardly anything in the world that some man cannot make a little worse and sell a little cheaper, and the people who consider the price only are this man's lawful prey."—John Ruskin. (per Larry Rapp)

Activity at Columbia Machine Works



Top: Gate Hoists for U. S. Corp of Engineers

Bottom: 600-lb. cast steel valves

James Pringle, Sales Manager of Columbia Machine Works Ship Repair Division, located at Pier [illegible], San Francisco, has announced that Jonathan L. [illegible] has joined the [illegible] Ship Repair Department as Assistant to the Sales Manager. He will maintain contacts throughout the Pacific maritime region.

At their San Francisco Repair Division and at their Berkeley Plant, Columbia Machine Works specializes in all types of general ship repairs, conversions, design work and general machine shop operations.

The firm also recently completed several big jobs for the Bureau of Reclamation, the products including special gate hoists, and has performed such specialty work as the building of coin presses for the Federal government.

But in the increasingly busy ma

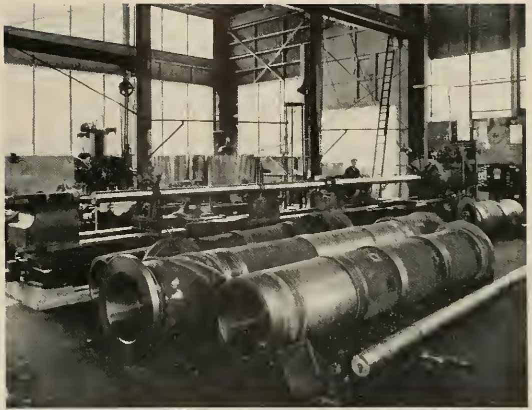
John D. St gen, superintendent

James Pringle, Sales Manager, Ship Repair Division.

rine line of work—under the direction of John D. Stigen, Superintendent of Columbia's Berkeley machine shops, C-4 tail-shaft work is performed. The shop in the past has turned out fifteen sets of C-4 shafting and this work was all performed in the company's especially tooled up shop. The shrinking on of the unusually long one-piece bronze liners called for special equipment designed by the Columbia staff.

Stigen was for fifteen years in the Marine Department of Standard Oil Company of California as Assistant Port Engineer, in the days of John C. Rohlfs and James Cronin. In 1934 he joined Louie K. Siversen at the Columbia shops. One "cut back" into Stigen's interesting range of experience was in 1927 and 1929 when at Krupp Yards at Kiel he supervised construction of the tanker *California Standard.*

Fletcher F. Monson, Assistant Sales Manager, Ship Repair Division.



Top: C-4 stern tubes and Navy shafts.

Bottom: Crankshaft for German-built Diesel engine for South America.

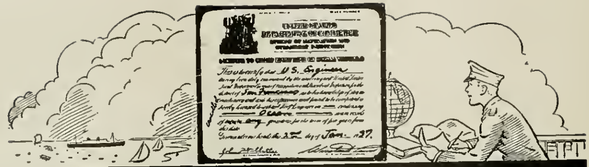
Inland Barge Demand is Growing

Now on order at Dravo Corporation's Neville Island shipyard, are 100 barges for transporting various cargoes on the inland waterways, the company has just announced.

Among the vessels are nine 175-foot coal barges for J&L Steel Corporation, Pittsburgh; three 195-foot hopper barges for Coyle Lines, Inc., New Orleans and a 175-foot liquid chlorine barge for the Columbia Chemicals Division of Pittsburgh Plate Glass Company.

Other vessels on order include sand and gravel barges, open hoppers, deck barges and tank barges. Recently completed were 12 large tank barges for movement of aviation fuel.

In the design stage at Dravo are six new 108-feet, 1000-horsepower diesel towboats, two for Jones & Laughlin Steel Corporation, two for Pittsburgh Consolidation Coal Company and one each for Crucible Steel Company and the Island Creek Fuel & Transportation Company.



Your Problems Answered

by "The Chief"

"The Chief's" department welcomes questions—Just write "The Chief," Pacific Marine Review.

Vibration

(Concluded)

THEY were fueling in Yokohama. The early morning mist obscured the several giant hoses leading off the port side to the oil barge below. The *Marine Reviewer,* fast twin screw cargo liner, was due to make her first really full speed run to Seattle. All standard speeds and other limits had been removed by the Company's Superintending Engineer and speed was left to the Captain and Frank Farran, the Chief Engineer. Schedules were off and they were told to make the fastest time they could with safety.

This seemed to be just the occasion for continuing the discussion of vibration with the engine crew, begun at his previous seminar. Later with the men assembled, Farran turned to McCoy, the experienced but inquisitive First Assistant Engineer.

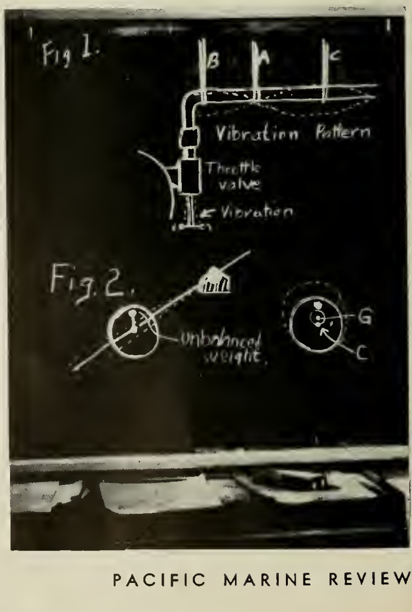
"Mac, you were going to report on the removal of a vibration in the main steam throttle on the for'ard engine. At 98 revolutions the throttle wheel and valve stem vibrate at four times propeller speed and it appears to have no connection with the turbine vibration which is not even noticeable at that speed. You were to attempt to stop it by the de-tuning principle we discussed last seminar. Let us have your report."

"Mr. Farran, it was more difficult than we expected." Mac moved over to the blackboard screwed to the inboard bulkhead. "Now like I show here at A, (Fig. I.) B, and C the steam line is supported by pendant brackets. The throttle wheel vibrated every which way. It was a strong vibration. I could grab it with both arms and even with the help of the oiler on watch we could not stop it. It was no case of a loose fit. So we started checking back on the steam line. The bracket at A was quiet; the steam line at B and C was vibrating up and down strongly. This dotted line shows the vibration and how it was shaking the daylights out of the throttle valve. The steam strainer above the throttle was even worse. No wonder the wheel shook like a Harlem fan dancer."

Farran broke in. "The vibration of the steam line as you have drawn it shows a perfectly tuned condition. The node of zero displacement comes at the support A, but brackets B and C must be loose and not carrying enough load."

"Aye, and that they were," McCoy went on. "We loosened A by dropping it down a quarter inch, and then

Figures 1 and 2.



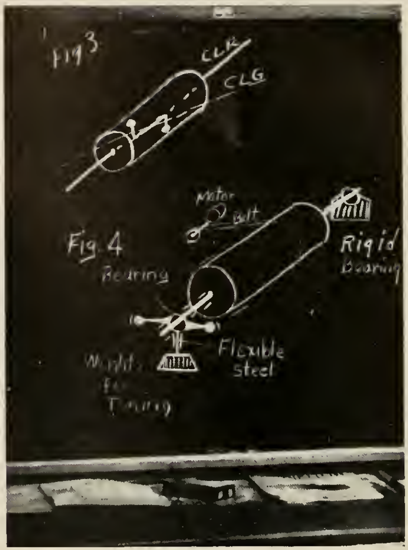
tightened B and C until the motion stopped. It was the funniest thing you ever saw. A few turns of the wrench in the right place and by golly, she's gone."

Farran rose from his desk and went over to the board and erased the figure. "That's fine, Mac. You did a good job. You haven't strained the throttle valve any because it is so much stronger and heavier than the superstructure which carries the brackets. Furthermore you have eliminated a regular vibrating force which might lead to crystalizing and fracturing of some part at an unfortunate moment. Now let's get down to the subject of today's discussion. A weight moving in other than straight resists being curved out of a straight line. This is due to its inertia and centifrugal force. If it is on a rotating system like this, (Fig. 2.) the force is proportional to the weight, and to the square of the RPM. It is also inversely proportional to the radius of its circle of rotation. This centrifugal force is a rotating force tending to pull the system out of its center of rotation. If unrestrained at the bearings, this rotating disc system will spin about its real center of gravity marked G in the figure, and its geometrical center or shaft center C will rotate in a circle about the gravity center G and the whole system will spin in an eccentric fashion. It will be spinning in a smooth vibrationless manner entirely free from reciprocating forces. The extractors in the laundry are good examples of this. The clothes are stacked in without respect to a balance. It then spins about its gravity center, and the shaft and bearing wobble unrestrainedly except by springs or soft rubber. There is a minimum of pulsating force. Now if we restrain the bearings of this rotating system in Fig. 2 we can eliminate the wobble but at the expense of high pulsating forces. Suppose we restrain in a horizontal direction only. We then have high reciprocating horizontal forces, with a minimum or no horizontal movement, and high reciprocating motion in a vertical direction with a minimum or no force in a vertical direction."

George Cambell broke in excitedly. "Oh, Mr. Farran, you mean that if we do not try to stop a vibration but let it wiggle all it wants to we have a minimum of force in the system?"

"Yes, George, literally that. But it would be better to say that to the degree and in the direction that we restrain a rotating vibration we have a corresponding reciprocating or rotating force." Farran paused.

"Now of course we seldom have a disc but instead the rotating system has some length in the axial direction. (Fig. 3.) Furthermore, this mass may be considered as composed of many discs stacked up along the axis of rotation. Each of these discs will have a center of gravity different from the center of rotation. But this complex picture can be simplified to that shown here, consisting of a uniform mass with two unbalance masses opposite each other with respect to the diameter, and located at different places along the axis. This mass (Fig. 3.) then if unrestrained would rotate about a centerline of gravity CLG instead of the true geometrical center line CLR. And this, of course, would produce a decided wobble in the shaft. Now if we restrain the shaft to rotate in fixed bearings about the true center line CLR, instead of a smooth wobble we have a system running true, full of the thunderous roar of powerful reciprocating forces or just plain bad vibration. This is, of course, the usual case of the motor, pump, turbine rotor or generator rotor. It is not as easy to correct as would be the vibration in the disc (Fig. 2.) where we would put a counter weight opposite the unbalance weight. In Fig. 2 we can detect the unbalance by putting the system on true, level parallel rails and let it slowly turn until the heavy side is down. We get the amount of error by putting a sticky putty temporarily at the top of the rotor after it stops moving. We vary the amount of putty or trial weight until the wheel shows no tendency to stop at any place at all, but rests wherever we put it. Then we add this amount of weight permanently or deduct an equal amount on the opposite side at the same radius. This is called the static balance because it is checked with the wheel stationary, or nearly so."



Figures 3 and 4.

"Now, if by chance the two weights in Fig. 3 are equal, the mass would not show as unbalanced on the parallel level rails. The static test will not reveal the unbalance wobble of the system of moments here."

George Campbell had a question. "But, Mr. Farran, if an unbalanced rotor runs smooth when spring supported, and, although wobbling makes no vibration noise, why isn't it done?"

"It is done in the case of a spinning top, or sometimes the centrifuge oil filter. Most machines require a limited and fixed clearance between the rotor and the stator. With the turbine and motor the rotor would wobble and

(Continued on page 89)

Tank Barge Expanded at Todd's

AT Todd Shipyards Corporation yard in Hoboken, the Poling Brother's Tanker No. 1 had its capacity increased from 6,700 barrels to 10,000 barrels by the addition of a prefabricated midsection.

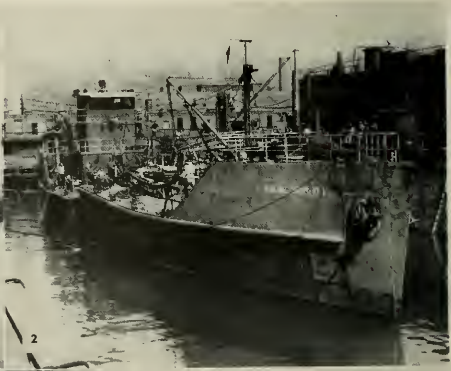
The barge was brought into drydock on June 27, 1950. Welders cut the vessel in half, utilizing cutting torches which operated above and below the water. As the barge had been brought into dock stern first, the stern section was water ballasted, permitting the bow to float free as soon as the cutting was completed.

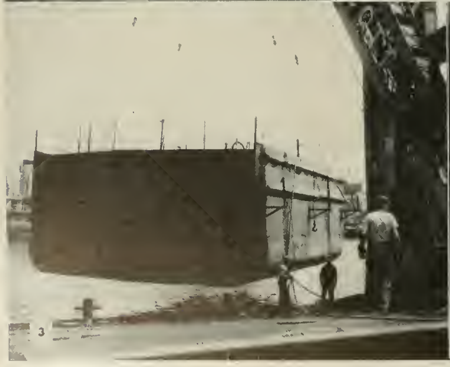
The midsection, previously fabricated in the yard, was lowered from its building platform into the water, and floated into position to be attached to the stern. Placed in position, this addition was welded to the old stern section, permitting the bow section to be floated in and attached to the new middle.

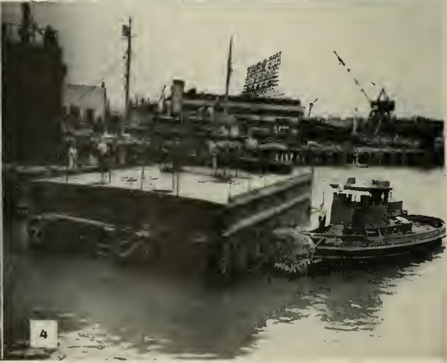
As soon as the middle section work was completed, the bow was floated in and welded, the final result being the

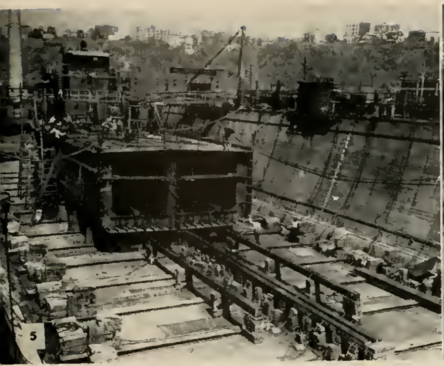
1. Tank barge shown entering the Todd yard in Hoboken.
2. Bow section of the barge drawing slowly away from the ballasted stern.

3 & 4. The midsection, previously fabricated in the yard, being lowered from its building platform into the water, and floated into position to be attached to the stern.









5. Yard workers complete the junction of the stern and middle sections in preparation for the arrival of the bow.

6. The bow is floated in and welded.

10,000 barrel tanker heading back into the harbor for resumption of her normal duties.

This addition to the tanker, which included considerable other general alteration work, was completed within three weeks. Aside from the added capacity and efficiency of the barge, its lines and operating characteristics were not materially altered by the addition of the 70-ton, 3,300 barrel midsection.

7. The 10,000 barrel tanker heads back into the harbor to resume her normal duties.

"Ports of the World"

The fourth edition of *Ports of the World*, published by The Shipping World, Ltd., London, is now available. The price is 40 shillings, postage free.

The publication gives information on all the important ports of the world, with data on the following: drydock accommodation; pilotage; towage; port and dock dues; warehouse facilities; trade, range of tides; prevailing wind; depths of water; railway, ship repair and bunkering facilities; port officials; local holidays; stevedoring and mooring dues; incidental charges, etc.

Arranged for easy reference, the book is divided into continents which are sub-divided into countries. The ports of each country are arranged alphabetically and a comprehensive alphaberical index of overseas ports is also included. There is a section of 16 colored map pages, tables of steaming distances between the principal ports of the world, and a table showing zone standard time at various places overseas.

The book may be purchased from the publisher's American agent, Edward W. Sweetman, 1 Broadway, New York 4, N. Y.

Dedication of New L. A. Marine Terminal

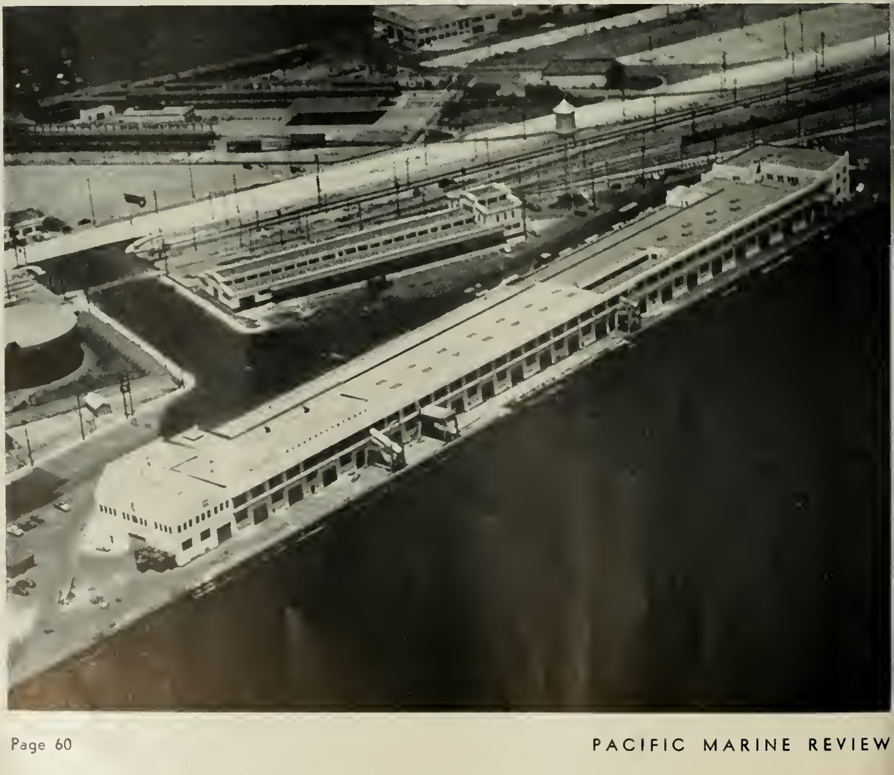
THE new $3,000,000 passenger-cargo marine terminal at Berth 154, Wilmington District, was dedicated and preferentially assigned to the American President Lines at ceremonies on August 28.

Speakers at the ceremonies were George Killion, Mayor Bowron, Councilman George Moore of the Harbor District, Edgar Wilson, Vice President of American President Lines, and Admiral Wilder D. Baker, Commandant of the Eleventh Naval District, San Diego. John Chadwick, President of the Board of Harbor Commissioners, was Master of Ceremonies. A huge gold key to the new shed was presented to Killion by Mayor Bowron.

The new terminal will represent a $4,500,000 investment by next Spring when an additional clear-span, two-story cargo shed is constructed 140 feet south of the new terminal. The terminal is capable of handling 150,000 tons of cargo every month. The facility has been joined to the present American President Lines' cargo shed, making one long facility 1,008 ft. long and 120 ft. in width.

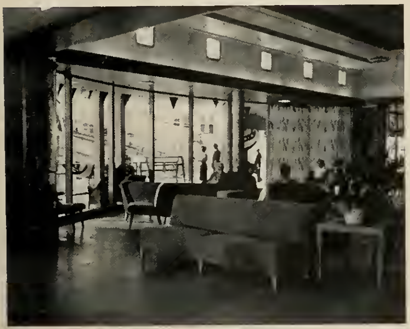
The passenger lounge is lavish in appointments and has large 20-foot-high windows fronting the main channel. The passenger corridor adjacent to shipside is 18 feet wide and 840 feet long. A huge baggage room for customs inspection is provided adjoining the passenger lounge. Electric escalators and elevators are provided for passengers and cargo. The passenger escalators and

Aerial view shows new American President Lines Terminal just completed at Los Angeles Harbor, Wilmington District, Berth 154.



Maralou Grey, mermaid of the Port of Los Angeles, presents Golden Key to the City to American President Lines' President George Killion at formal ceremonies dedicating the new terminal, while John B. Chadwick, President of the Los Angeles Harbor Commission, and Mayor Fletcher Bowron, speakers at the ceremony, observe.

Passenger Waiting Room of new terminal. "Like stepping into the lobby of the Waldorf," say the visitors.



Reversible escalators carry passengers from floor to floor.

S. S. "President Wilson," transpacific luxury liner, first ship to use the new terminal, shown departing from harbor August 31.

elevators serve palatial waiting rooms, furnished like a hotel lounge, decorated with etched-glass murals and finished with Philippine mahogany. These waiting rooms open out onto a long esplanade or veranda from which the passengers board directly to the Promenate Deck of their waiting ship. Five thousand soldiers could be loaded aboard ship every two hours.

The new terminal provides thirty-foot apron wharves which permit easy loading of cargo from sheds to ships. Ninety-foot roadways, and high and lowline trackage, give ample access to the shed by motor trucks, passenger automobiles and railroad cars.

Port Engineers Resume Meetings

The first Fall meeting of the San Francisco Society of Port Engineers, arranged by Program Chairman Marshall Garlinger, was held at the shops of the General Electric Company on Harrison Street where Russ Schneider, Bob Brown, G. K. Koernig and others of the G.E. staff conducted demonstrations of the balancing of rotating equipment, reblading turbines, and shaft metal spraying. They used the elaborate machines of the shop in their tests, and charted the results of the turbine balancing.

Refreshments were served by General Electric following the meeting. And speaking of refreshments, one of the happy phases of the Society is the hearty relationships that exist between the members. On this occasion, special honor was paid to George Barr of General Electric following his retirement the previous week. Alex Johnston of Pacific Marine Refrigeration Company arranged for a kilted bag-piper to play while an engrossed scroll was presented to George. The scroll is reproduced on page 63. (For an account of the General Electric banquet for George Barr, see page 68 in this issue.)

October Meeting

The October meeting in San Francisco will be addressed by Joe Ures of the Crane Packing Company. He will demonstrate the micrometric precision method of lapping steel surfaces, and also the rolling of condenser tubes.

This will be a dinner meeting.

Port of Seattle Concludes $1,800,000 Waterfront Purchase

The Port of Seattle has purchased 1320 feet of central Seattle containing six piers and allied warehouse and industrial facilities at a cost of $1,800,000. The Port's president, J. A. Earley, explains that the area transferred is one of the largest to change hands in the history of the Seattle waterfront, and includes piers 43, 45, 46, 47, 48, and 49.

Earley announced that no changes in the property are planned for the immediate future but "that could be changed overnight if the war situation demanded it."

Purchase of the property was financed through the sale of $1,800,000 in revenue bonds at 3% and accrued interest to the Pacific Coast Co. The bonds are payable solely from the future earnings of the properties involved.

Pacific Coast Coal Co. will continue to operate property's pier 43 coal bunkers and the retail fuel establishment now on the site under a lease arrangement with the Port of Seattle. Luckenbach Steamship Co., Olympic Steamship Co., and Moore McCormack Lines lease piers on the new Port of Seattle property.

Adjoining the property on its southern boundary is the Port of Seattle's pier 42, leased by Alaska Steamship Co., and one of the most modern such terminals in the country.

Earley stated that acquisition of the new facilities is

Top: G. K. Koernig speaks to the assembled Port Engineers at their Fall meeting while the Marshall looks on.

Front center is Alex Johnston, who arranged for the Caledonian piper, referred to in the story above.

Bottom, left to right: George Barr, R. O. Brosemer, R. J. Brown, G. L. Crow, J. R. Schneider, R. E. Seemann, H. P. Vale, W. R. Hall, H. W. Ogilvie, G. K. Koernig, R. Y. Meyers.

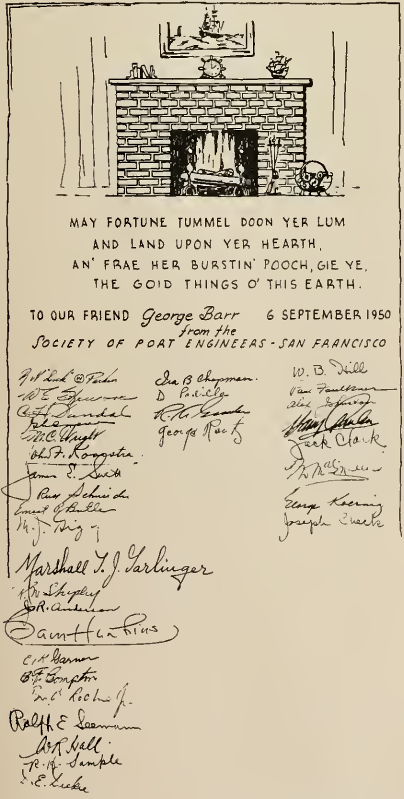
especially desirable since the site contains the only remaining developable land apron on the central waterfront between Alaskan Way, which carries the bulk of Seattle's waterfront traffic, and the pier sites. This factor will allow full development of truck and rail loading and unloading facilities.

Two hollow-eyed, bleak-looking Scots were discussing the wild party of the night before. "D'ye ken," said one, "that Mac fell in the river on his way home last night?"

"Ye dinna mean tae say he was drooned?" asked his friend.

"Na, na," replied the first, "not drooned . . . but sadly diluted!"

A Scroll for George



MAY FORTUNE TUMMEL DOON YER LUM
AND LAND UPON YER HEARTH,
AN' FRAE HER BURSTIN' POOCH, GIE YE,
THE GOID THINGS O' THIS EARTH.

TO OUR FRIEND *George Barr* 6 SEPTEMBER 1950
from the
SOCIETY OF PORT ENGINEERS - SAN FRANCISCO

Ira B Chapman
W. B. Hill
M. C. Wright
James E. Smith
Russ Schneider
Ernest C. Butler
Van Faulkner
Jack Clark
George Koenig
Joseph Check
Marshall T. J. Tarlinger
H. W. Shipley
J. R. Anderson
Sam Hawkins
C. K. Garner
B. F. Compton
Ralph E. Seemann
W. R. Hall
R. H. Sample

Amercoat Applications by Martin

Every time we meet Eddie Martin, San Francisco distributor for Amercoat, he tells of a newly completed job of applying Amercoat to some vessel or he has a report on an application previously made.

The W. R. Chamberlin lumber carrier *C-Coaster* had an application of Amercoat plastic anti-corrosive on her hull in June 1949. Over a year later the drydocking showed the coating to be still in excellent condition and no additional painting was needed.

Sometime ago J. C. Freese & Company applied two coats of Amercoat to their then newly-completed tug, using the plastic anti-corrosive both inside the hull and on the decks, stack and house. Though in a tough service the application shows no sign of deterioration.

The River Lines, operating on San Francisco Bay and its tributaries, used Amercoat plastic on the hull of the tug *Calusa*. The first inspection after several months' use suggests that they have the solution to a corrosion problem. They also Amercoated the deck, pouring sand in the last coat before it dried to make a tough non-skid finish.

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MARINE MANAGERS
Clayton E. Roberts
Alberto Martinez, Jr.

Wagner on War-Time Shipping

John Wagner, Vice President and General Manager of Pacific Far East Line, addressing Junior World Trade Association at San Francisco's Union League Club. To Wagner's left, (behind manuscript) is John H. Robinson, President of the Association.

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140 Sansome Street
San Francisco 4, Calif.

Northwestern Department:
Paul A. Carew, Manager
Colman Building
Seattle 4, Washington

Service Offices:
530 West Sixth Street
Los Angeles 14, Calif.

411 Yeon Building
Portland 4, Oregon

We are indebted to the Navy League for this gem, and for their inquiry

"Who Said This?"

". . . it seems that the people of America will, in some form or other, extend their dominion and their power, until they shall have brought within their mighty embrace, multitudes of the islands of the great Pacific.

"And I think too that eastward and southward will her great rival in future aggrandizement (Russia) stretch forth her power to the coasts of China and Siam; and thus the Saxon and Cossacks will meet once more, in strife or friendship on another field.

"Will it be in friendship? I fear not!

" The antagonistic exponents of freedom and absolutism must then meet at last, and then will be fought that mighty battle on which the world will look with breathless interest.

"On its issues will depend the freedom or the slavery of the world—despotism or rational liberty must be the fate of civilized man."

The foregoing is a quote from remarks of Commodore Matthew Calbraith Perry, USN, before the American Geographical Society on *March 6, 1856.*

THE TRADE-MARK OF DEPENDABILITY

REPAIRS by BETHLEHEM

for SPEED...ECONOMY... DEPENDABILITY

Located on the Atlantic, Pacific and Gulf Coasts, Bethlehem's ship repair yards handle all types of repair and conversion work with speed, economy and efficiency. For assurance of dependable work and complete satisfaction on every job, *no matter how large or how small,* on any class of vessel *from harbor craft to ocean liner,* always specify, "Repairs by Bethlehem."

SHIP REPAIR YARDS

Boston Harbor	New York Harbor
Baltimore Harbor	Beaumont, Texas
Los Angeles Harbor	San Francisco Harbor

SHIPBUILDING YARDS

Quincy, Mass.	Staten Island, N. Y.
Sparrows Point, Md.	Beaumont, Texas
Terminal Island, Calif.	San Francisco, Calif.

SHIPBUILDERS *SHIP REPAIRERS*

BETHLEHEM STEEL COMPANY

Shipbuilding Division

General Offices: 25 Broadway, New York 4, N. Y.

On the Pacific Coast shipbuilding and ship repairing are performed by the Shipbuilding Division of Bethlehem Pacific Coast Steel Corporation

M. J. Buckley Retires

By GENE HOFFMAN
Director of Public Relations
American President Lines

M. J. BUCKLEY, Senior Vice President of American President Lines, and universally hailed as the "Patriarch of West Coast Shipping," retired from active duty with his Company September 1, after rounding out nearly a half century of distinguished service to American flag shipping.

His colleagues bade him bon voyage on his well-earned "tour of leisure" at a swank club luncheon over which APL President, George Killion, presided as master of ceremonies and delivered the principal eulogy on Mr. Buckley's contribution over the years to his Company and to the American Merchant Marine in general.

George Killion, President, American President Lines, is shown presenting M. J. Buckley, retiring Senior Vice President, with a gold engraved wrist watch at a luncheon held in honor of Buckley, on August 31st. The watch was inscribed in Latin, "Si Monumentum Requiris, Circumspice" . . . translation: "If you seek his monument, look about you."

This was an unusual experience for "M. J." or "Mike," as he is affectionately known to thousands, to have to sit and listen to someone else talk; because "Mike" himself is one of the most fabulous and best beloved masters of ceremonies and raconteurs in town.

Despite his heavy schedule of work for his Company, "Mike" has always been able to find time for worthwhile civic and charitable affairs. For instance you'll find him serving on Mayor Robinson's Park and Recreation Commission, writing a skit or poem for his favorite club, The Family; EmmCeeing a Steamship Night Dinner for the Pacific Traffic Association, clowning as a Past Potentate of Hibernia Temple before the Shrine Luncheon Club; hosting a visiting celebrity, making a speech to advance the cause of the Merchant Marine; taking his grandchildren to the Zoo; and once in a while getting in a weekend at his cozy retreat on the Russian River. (Mike says that's the only time he ever "retreats.")

All of which has made the "Great Mike Buckley" virtually a legendary figure while still active in business. His friends, who are legion throughout the United States and the World, will hope that his retirement from the shipping scene will not diminish the activities of this beloved personality in other phases of community life. Mr. Killion announced that "M. J." will continue on in an active advisory capacity to the management.

The statement that "M. J. Buckley . . . is virtually a legendary figure while still active in business," is based on the fact that there are few ports in the world, where shipping men meet and "talk shop," that Mike Buckley is not known and respected, and some of his favorite stories repeated.

Mr. Buckley's shipping career began in 1902 with the old Pacific Mail Company after graduating from St. Ignatius College, now the University of San Francisco. From 1917 to 1921 he had his own steamship agency, and for two years following was Manager of Operations of the old United States Shipping Board.

In 1922, Mr. Buckley became Freight Traffic Manager, later Vice President, Freight Traffic, of the corporation which he served until today as Senior Vice President. It was then the Dollar Steamship Lines, which became American President Lines in 1938. In addition to his senior vice presidency, Mr. Buckley was also a member of the Company's Board of Directors, and a Member of the Executive Committee.

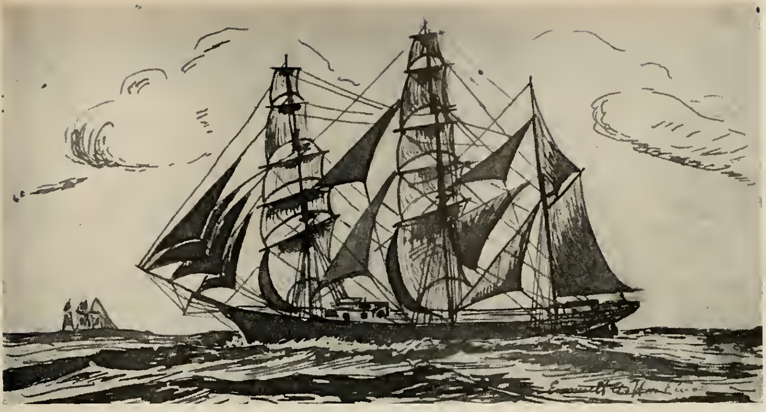
Probably no other man in Shipping today has had the varied and wide-spread experience in all phases of the Industry as M. J. Buckley. By the same token, he has more proteges, has trained more men in his own and other companies than perhaps any other man in the Industry.

During his long and distinguished career, Mr. Buckley has traveled extensively, especially to the Far Eastern markets served by his Company. In 1946 he was an industry adviser to the State Department at the meeting of the United Maritime Consultive Council in Amsterdam.

He has contributed many widely-read articles on shipping and foreign commerce to newspapers and technical publications and has taken an active part as panel leader and speaker in the annual meetings of the American Merchant Marine Conference, the Propeller Club of the United States, the National Foreign Trade Council, and various Pacific Coast domestic and foreign trade groups.

Mr. Buckley has been active in the formation and development of Traffic Conferences, Pools and related organizations in various parts of the world, and is generally recognized as one of the best informed shipping experts on the scene today.

It is said that when a particularly knotty problem in West Coast shipping arises, the Industry has one of three choices: Pray, Call Washington, or ... Ask Mike Buckley!

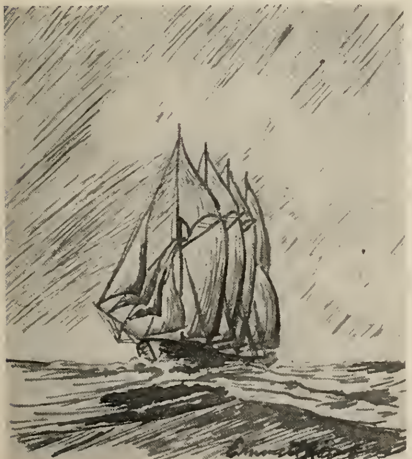


Bark "Annie Johnson"
—Drawn in ink by Emmett A. Hoskins.

The "Annie Johnson" — Matson's Last Sailing Ship

THERE is something about an old ship that never dies and those who sailed aboard her are as jealous of their memories and of the ship's performance and the details of construction as any creative artist can be of his finest work.

Auxiliary Schooner "Annie Johnson"



In the ports of the world where seamen meet the superior sailing records and the equipment of their ships were worth a fight anytime.

A ship retains its form and beauty in a seafaring man's mind and it is not unusual for one who has been ashore for half a lifetime to remember his ship so well that he can make a model or draw a picture that will be recognized to the last sheet or pin.

One of the last of the Matson Navigation Company's sailing ships, on which Matson's retiring marine manager, Captain Harold R. Gillespie sailed under Captain Murray, was the bark *Annie Johnson*. The *Annie Johnson* was an iron ship built as the ship *Ada Iredale* in 1872 for Peter Iredale of Liverpool. Captain Matson bought her in 1900. She had been afire at sea and abandoned, and came under American register. Her name was changed to *Annie Johnson* and before Captain Matson bought her, she made some smart passages, one of the best being from Liverpool to Portland, Ore., in 117 days, within four days of the record. Under the Matson house flag, she made the remarkably fast passage in 1903 from the Golden Gate to Diamond Head, Honolulu, in 8 days, 9 hours, bettering the record of Matson's clipper bark *Roderick Dhu,* from San Francisco to Hilo, by 18 hours.

Rerigged as a schooner the *Annie Johnson* sailed for the Matson Navigation Company until 1926 when she was sold.

In the drawings on this page, done in ink by a good friend of the Pacific Marine Review, Emmett A. Hoskins, old-timers will recognize the *Annie Johnson* as a bark and as a schooner.

Running Lights

George Barr Not the Retiring Kind

AT a party honoring George Barr upon his retirement after 43 years of service, the entire facilities of the Engineers' Club at San Francisco were pressed into service to accommodate the great number of his associates of the General Electric Company who gathered to do him honor. Hughes Ogilvie presided and threw on a screen photographs of George in typical poses during some 58 years. Reminiscent talks were made by E. O. (Bill) Shreve, retired vice president of G.E. and former president of the U. S. Chamber of Commerce, Vice President Ray Turnbull, Federal & Marine Dept. Manager George Crow, R. F. Monges, Bill Hall, Allen Jones, George Koernig, R. O. Brosemer and M. S. Barnes, and some frugal remarks by George Barr himself. Messages were read from people of note all over the world.

Just two years ago we had occasion to publish something of George Barr's biography, and since it seemed to fit at the time we repeat it here:

George Barr was born in Paisley Scotland, some time before the turn of the century. He learned his Marine Engineering by stiff competition in the apprentice system and finished his apprenticeship during a time when the market was glutted with licensed engineers. The only immediate prospect for Juniors was to sign on for foreign service. George signed on for four years with the British India Steam Navigation Company and spent his time sailing "somewhere East of the Suez." On return to the homeland he procured a Chief's ticket and a marriage license; thus he forsook his first love and started out for the New World in 1907. His first job was with Fletcher

George Barr

Below, left: Ray Turnbull, Vice President of General Electric, divulging to a packed GE audience some of the intimate details of George Barr's long service with General Electric. And Ray knows how to tell 'em.

Below, center: Hughes Ogilvie, who was Master of Ceremonies at the banquet; the giant scope GE television set, one of many presents to George that evening (the easel, the scotch bonnet and artist's smock were among the gifts); and George Barr.

Below, right: GE engineer John Dodds, who in private life is the "Chief" in the Pacific Marine Review pages; Earl O. Shreve, to whom George Barr reported when he first arrived at the General Electric office in San Francisco; George Barr; George Crow; and Hughes Ogilvie.

Photo by GE's Jack Corlett

in Hoboken working on the *Harvard* and *Yale* but life in Hoboken was too much of a change from life in the Orient so he found a job in Schenectady, N. Y., a little community, far removed, where young couples could establish a home and settle down to their mission.

George worked through different stages of advancement in the Turbine Department of the General Electric Company and saw the evolution of turbine design, the introduction of gear propulsion and electric drive. He supervised the building of the first reduction gear sets and the electric drive equipment for the collier *Jupiter* but his chief work was in erecting and testing central station turbine generators.

In 1918 he was transferred to San Francisco to supervise installation of machinery on 46 destroyers, which were built at the Union Iron Works. Between the two wars his time was equally divided between land and marine installations, but at the commencement of the last shipbuilding program he was assigned to carry out marine installation and repairs, completing the program in 1946, with great praise from Admiral Mills, Chief of the Navy's Bureau of Ships, for having restored many ships to the Navy's combat fleet.

George's greatest relaxation is to lie in a hammock and supervise the cutting of his lawn. But he has a hobby that is bringing him fame comparable to that of his engineering work. Throwing a colored photograph on a wall on canvas, George matches the colors in paint and comes up with a picrure that the great masters would covet. Who but a Scot would develop a hobby like that one? Who but a Scot would use only two r's in his name when most people think there are four?

Words of praise almost beyond number have come to George Barr but he has also been the recipient of special awards. In 1946 he received a Coffin Award from the General Electric Company and in 1948 the Navy Commendation of Merit for his contribution to the war effort.

Don't go too far away, George. We'll be needing you still.

A Tanker's Multiple Job at Sea

A Navy tanker simultaneously refueling the carrier "Valley Forge" and a destroyer at sea.

Photo by Ted Huggins of Standard Oil

Ships' Keels Cut in Forest

Keels more than one-hundred feet long for wooden ships are cut and shaped on the spot by Henry Edmonds of Packwood, Washington, using a McCulloch chain saw for all operations, including felling, slabbing, and cutting to the proper length.

Keels and other special timbers are cut to order by Edmonds, the majority being 16 by 18 inches by 100 feet or more. Many of the long ripping cuts he makes with his McCulloch saw are through timber more than three-feet thick. His unusual occupation, which is reminiscent of the days when spars for sailing vessels were cut and shaped in the woods, has the advantage of removing waste material from the timber before transportation.

Left, top: Henry Edmonds of Packwood, Washington, and one of his helpers making the first rip on a keel. This particular log was over 100 feet in length.

Left, bottom: Closeup of sawing operation in keel shaping being performed by Henry Edmonds. He uses a McCulloch Chain Saw for all operations including felling, slabbing, and cutting to proper length.

Below: Keels are cut to order, and finished measure 16" x 18" and are over 100 feet in length.

APL Advancements

George T. Paine has assumed the position of Operating Manager for American President Lines. He was formerly Assistant Operating Manager in charge of Engineering.

A number of personnel changes at the executive level in the American President Lines' staff are announced by President George Killion. They became effective September 1.

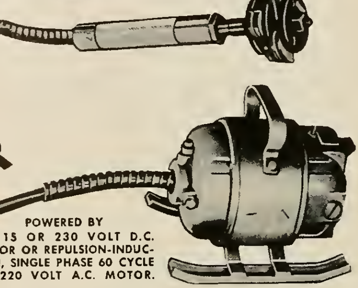
E. D. Flaherty, Operating Manager, is being transferred to Los Angeles where he will become General Manager, Southwestern Territory. A Captain in the U. S. Naval Reserve, Flaherty joined the American President Lines in 1938 as General Office Manager. He served with distinction as Commander of the Armed Guard Center on Treasure Island during World War II, after which he returned to APL as Secretary of the Corporation. In 1949 he was made Vice President in charge of Operations.

George T. Paine, Assistant Operating Manager in charge of Engineering, will assume the position of Operating Manager. Former Commander of the Terminal Island Naval Shipyard and a well-known shipbuilding expert, Paine joined American President Lines in 1948, to supervise construction of the Company's three new round-the-world passenger liners, now building at Camden, N. J. A native of Warwick, Rhode Island, and educated at Brown University, Harvard and Massachusetts Institute of Technology, Paine served as a Naval officer in the first World War. He made the Navy his career and served in successive responsible positions until his retirement in 1947 with the rank of Commodore.

E. E. Mann, Superintendent of Construction and Repairs, Engineer-

don't miss the boat . . .

ARNESSEN ELECTRIC RUST CHIPPING HAMMER



POWERED BY 32/115 OR 230 VOLT D.C. MOTOR OR REPULSION-INDUCTION, SINGLE PHASE 60 CYCLE 110/220 VOLT A.C. MOTOR.

REMOVES RUST QUICKLY
DOES THE WORK OF 8 MEN
NO RUST TOO THICK • NO PITTED PLATES
OPERATES FROM ORDINARY LIGHT CURRENT
CUTS COSTS • PAYS FOR ITSELF

Write for details to your own specific application.

The most valuable and necessary tool in the marine field today.

Fast, efficient, and rugged . . . No rust or scale is out of reach of this easily portable and simply operated machine, with its long, flexible shaft.

Around corners . . . into deep angles and seams . . . this Arnessen Electric Chipping Hammer gets everywhere and does a thoroughly quick, clean job.

ARNESSEN ELECTRIC COMPANY INC.
116 BROAD STREET, NEW YORK 4, N. Y.

ing Division, becomes Assistant Operating Manager, Engineering. Mann also is a former Navy man, having graduated from the Academy in 1925. He joined American President Lines early this year after retiring as head of the Planning Board at Terminal Island Navy Yard, with the rank of Captain.

E. D. Flaherty, General Manager, Southwestern Territory

S. J. Hindle, General Agent at Los Angeles, will become General Agent, Southwestern Territory. "Jim" Hindle is a veteran of 25 years service with APL, and is one of the best known and most popular traffic men in the Los Angeles area. Graduating from the University of California, he has had wide experience of all phases of the shipping industry.

Killion pointed out that his Company is expanding its operations in the Southern area, and that APL took assignment from the Los Angeles Board of Harbor Commissioners on the new three million dollar Terminal facility just completed there. He stated that it has become necessary to give Edgar M. Wilson, Vice President, Southwestern District, additional help on the executive level.

Morrell Partnership Formed

Announcement has been made that a partnership has been formed by Robert W. Morrell and Robert C. Morrell, naval architects, marine engineers and surveyors. They are established at 111 Broadway, New York City.

SKF Sets Up 11-State Western Sales Region

Establishment of an 11-state sales region to expedite future requirements of western industries for ball and roller bearings is announced by SKF Industries, Inc., effective Aug. 1st.

The new region, with headquarters in San Francisco, will include territory now serviced by district offices in San Francisco, Los Angeles and Portland and by the Denver branch office. This comprises the states of Washington, Oregon, California, Idaho, Utah, Wyoming, Montana, Colorado, Arizona, New Mexico, western Nebraska and the city of El Paso, Tex.

J. C. Bowman, district manager at San Francisco since 1936, has been appointed regional manager.

The growing industrialization of the far west is reflected in increased demands for anti-friction bearings. Dollar volume of sales is triple prewar levels, with aircraft, oil, steel and aluminum mills among the largest users.

Carson Takes Over as Propeller Club Manager And Tours the Ports

Joseph K. Carson

Since Joseph K. Carson was appointed General Manager of the Propeller Club of the United States, he has been throwing into the work all of the energy which made him such a hard-working member of the Maritime Commission. Seemingly the outstanding efforts for the welfare of the maritime industry were always linked to Carson's name.

Joe Carson knows that there are weaknesses in the position of the American Merchant Marine, especially in its relationship to the government, and that there is a real job to be done in developing the public and official mind to the real situation. In addressing the Pacific Coast Association of Port Authorities, Carson reported that when he became a member of the Maritime Commission, he soon learned that half truths, misuse of facts and other distortions were hurled about with impunity by those, many in influential places in Government, whose aim is to immobilize American flag vessels and turn over to foreigners all but a token amount of shipping. He saw them at work and knew the evil which abides their minds. "It is," he said, "a motley crew; ignorance, greed, pollyana, alien-isms, do-gooders, appeasers, socialistic termites, just to name a few. This lusty complement of un-American marplots is captained by an ideological freebooter devoid of American concepts."

Joe knows what he is facing, and has the courage and energy for the task.

Around the luncheon table as Joe Carson conferred with San Francisco Propeller Port officers are: Top: Ed Harms of Pope & Talbot Lines; John Parker of American Marine Paint; George Cooley of Williams Dimond; Bud Pessell of Matson; George Killion of American President Lines; Joe Carson; B. J. Feigenbaum of Board of State Harbor Commissioners.

Bottom: Marshall Levis of Marsh & McLennan, Frank Dwinnell of Pacific Far East Line; Tom Short of Thomas A. Short Co.; Henry Gelhaus of Todd Shipyards; George Thompson of the S. F. Call-Bulletin; Bob Mayer of Pacific American Steamship Assn.; Gene Hoffman of American President Lines.

the key to INDUSTRIAL DEVELOPMENT
is
TRANSPORTATION

The Port and the City of Long Beach

Modern industries, seeking the best in efficient air, land, and sea transportation, are establishing plants in the Long Beach industrial area. Three transcontinental railways connect Long Beach with the East, all offering uniform rates to the harbor district. Long Beach has a modern, municipally owned airport providing transcontinental air service. Approximately 180 common carrier truck lines operate direct to and from Long Beach over the ever expanding network of freeways in the area.

Close to the industrial areas of Long Beach is the Port of Long Beach, which has developed in proportion to the amazing growth of Long Beach. Only ten minutes from the open sea, the Port has many modern facilities for serving industries, such as the world's largest clear span transit shed, bulk loading conveyer, and radar control system, to mention only a few. Industry, too, agrees . . . the Port of Long Beach is indeed AMERICA'S MOST MODERN PORT.

The Port of Long Beach
AMERICA'S MOST MODERN PORT • CALIFORNIA

Aboard the "Golden Gate"

The Johnson Line, through W. R. Grace & Company, general agents, held a reception aboard the M. S. "Golden Gate" at San Francisco September 1, in honor of their Director of Traffic, P. J. Moberg, from Stockholm, Sweden. Pictured aboard the "Golden Gate" are, left to right: Fred L. Doelker, Pacific Coast Manager, Johnson Line, P. J. Moberg, and Robert E. Pyke, General Freight Agent. Inset, left to right: George F. Williams, Assistant Operating Manager, Harry A. Hunt, Assistant General Freight Agent, and Eugene S. Judge, Passenger Agent.

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ESTABLISHED 1904

OPERATING 10 DERRICK BARGES

5 in San Francisco Bay Area
5 in Long Beach-Los Angeles Area

100 Ton Lifting Capacity

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SALVAGE AND WRECKING A SPECIALTY

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NAVAL ARCHITECT MARINE ENGINEER

PALACE HOTEL, NINTH FLOOR
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FOR SALE: "MABI II" . . . 43 foot Stephens Twin Screw Cruiser. Built 1932. Twin Royals 140 hp each, just completely rebuilt. Equipment includes Fluid Indirect Heating, Electric Bilge Pump, 4-hp. gasoline charger, Butane equipped galley. Excellent condition. Berthed San Rafael. Price $12,500.00. The L. DEMARTINI CO., 275 Brannan St., San Francisco. Phone: GArfield 1-7087

Application for Membership in the Diesel Engineers International Assn.
576 Newark Ave., Jersey City, N. J.
Name ....
Address ....
Reference ....

McDonough Visits Western Offices of E. F. Drew

J. F. "Joe" McDonough, who travels to all saltwater regions for E. F. Drew & Company, Inc., recently visited the Drew offices on the Pacific Coast. In San Francisco he conferred with the Drew staff — Jack Churchill, Northern California manager, and Joe Lewis and Joe Moran. In Portland he toured all marine points with Jim Alex, in Seattle with Dal Hayward, and in Los Angeles with C. L. Gump.

"Joe" McDonough has many Drew enthusiasms, among which is the new "Ameroid Viscorator."

Installations of the Viscorator on vessels of West Coast operators are undergoing completion and their period of adjustment. This instrument bears evidence of supplying the perfect means of conditioning the fuel oil for designed combustion apparatus.

J. F. McDonough, E. F. Drew & Co.

PFEL Announces New Service

A new scheduled monthly service has been inaugurated by Pacific Far East Line, Inc., between the Pacific Coast of North America and Djakarta (formerly Batavia), Indonesia. *Northwestern Victory* was the first vessel to make this run.

The new service is an extension of the company's regular trade route between this coast and the Red Sea-Persian Gulf, and includes calls at Yokohama, Nagoya and Kobe, Japan, and Hong Kong, Saigon, Djakarta, Singapore, Bombay, Dammam and Basrah.

"SPRAYKOTE"

(copyright trade name)

GUN APPLIED: Fireproofing (3-hour Underwriters' Laboratories) sound deadening, condensation control, thermal insulation.

APPLIED DIRECT TO ANY SURFACE: Steel, concrete, corrugated metal, metal lath, plaster painted or unpainted, glass, etc.

ACOUSTICAL CORRECTION: Sound deadening and isolation applied in monolithic, one piece application without cracks or separations, with or without color.

INSULATION: Hull, bulkhead and deck insulation having a 3-hour fire rating.

"SPRAYKOTE FIRETEST FIBRE" processed in company owned fibre plant guarantees uniform grade fibre.

Factory trained applicators located throughout
United States and some foreign countries.

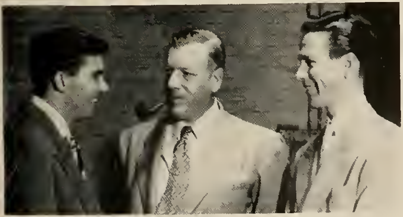
SPRAYED INSULATION, INC.

56-58 Crittenden Street **Newark 4, New Jersey**

Sopac Forms Chemical Division

George "Buck" Plant, president of Sopac Ship Maintenance Company, Inc. of San Francisco and Los Angeles Harbor, has announced the formation of a Chemical Division under the direction of Dick Richards as department manager.

His assistants in the expanded Chemical Division are Gil Hull and Arthur Hunter. All three men are widely experienced in chemical cleaning service. Sopac's new Chemical Division maintains equipment for the removal of preservatives from the laid-up fleet and the work includes descaling of boilers, evaporators and heat exchange equipment.



Heads of the newly formed Chemical Division of Sopac Ship Maintenance Co., Inc. Left to right: Art Hunter, Service Engineer, Dick Richards, Manager, and Gil Hull, Chemical Engineer.

"Dick Richards announces that the Chemical Division will render 24-hour service, with ship and shoreside steam service available.

PUBLISHER'S APOLOGY

This advertisement in our August issue was correctly headed 'SPRAYKOTE', but this word was mis-spelled later in the copy. Our sincere apologies . . . please see corrected advertisement above.

Courses in Corrosion Prevention

The Graduate School of Stevens Institute of Technology, in cooperation with the National Association of Corrosion Engineers, will offer two courses and a seminar on the corrosion of metals and corrosion prevention, beginning with the fall term.

The courses are designed for chemists, engineers, metallurgists and manufacturers who have corrosion problems and want to obtain knowledge of fundamental factors and possible cures.

Robert S. MacCormack of the Graduate School faculty will teach the first course on corrosion which will meet on Wednesday evenings, beginning September 27. This course will cover the fundamental factors and theories of corrosion beginning with the physical chemistry and electrochemistry involved.

18 knot White Cargo Liners

- Every 12 days to and from Philippines, Japan, Hong Kong.
- Monthly to and from Hawaii, North China.
- Regular calls to Japanese and Philippine outports.

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609 South Grand Ave., Los Angeles 17
Eastern Traffic Agents
AJAX STEAMSHIP AGENCIES, INC.
New York 14, 345 Hudson St.
Washington, D. C., 1625 "K" St., N.W.
Chicago 4, 327 S. LaSalle St.
Dallas, Cotton Exchange Bldg.

Modern Passenger Accommodations

Exide Battery Appointments

Thomas H. Dooling, formerly Pacific Coast Manager of Electric Storage Battery Company, has been appointed Western States Manager, and his territory has been expanded to include the area covered by the Denver Branch.

Willard W. Grundel has been appointed Assistant Manager of the San Francisco Branch of the company. A graduate in Electrical Engineering from the University of California, he started with the company in 1926 as a salesman.

Cushing President of Pacific American — Mayer is Assistant to President

John E. Cushing has been named President of the Pacific American Steamship Association, and Robert E. Mayer Assistant to the President. This is a reversion to the plan under which an operating executive heads the Association.

Cushing became president of The Oceanic Steamship Company on July 1, upon his retirement from the presidency of Matson Navigation Company, Oceanic's parent company. He has been associated with the shipping industry since 1908 and has had a long career in steamship operation. He went to Matson three years ago from American-Hawaiian Steamship Company, of which he had been president since 1938. A native Californian, he is a graduate of Stanford University of which he is now a trustee.

John E. Cushing

In the First World War Cushing was in charge of overseas military freight traffic at the Port of New York as a Major in the Army Transportation Service. Following the end of that war, he served as acting director of the Emergency Fleet Corporation of the United States Shipping Board. During World War II he was Assistant Deputy Administrator of the United States War Shipping Administration.

Mayer has been Director of Public Relations for the Pacific Maritime Association and the Pacific American Steamship Association. Born in St. Paul, Minnesota, he attended the University of Minnesota, the College of St. Thomas and the St. Paul College of Law. He received his degree in 1938 and was admitted to the practice of law in Minnesota in that year.

He was in the railroad freight forwarding business from 1934 to 1938. While taking his night law course, he worked with Acme Fast Freight, Inc., a nation-wide carloading company and thereafter

Robert Mayer

TRIPLE "A" MACHINE SHOP, Inc.

GENERAL SHIP REPAIRS

PIER 64

Albert Engel

San Francisco 7

William Blake

Phone: YUkon 6-5836

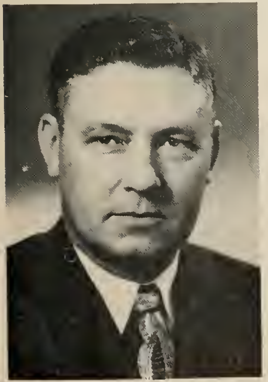
with the Twin Cities Shippers Association, a local St. Paul-Minneapolis carloading company.

He joined the Federal Bureau of Investigation as a Special Agent in July of 1940 and served in Washington, D. C., Seattle and Spokane, and then San Francisco. He resigned in October, 1945 and shortly thereafter became associated with West Coast shipping.

Cadwell Succeeds Newhoff at Union Oil

F. K. Cadwell, former Manager of Union Oil Company's Northwest Territory, has been appointed Manager of the Central Territory, succeeding retiring Vice-President of the Company, W. A. (Tony) Newhoff. The announcement was made by the company's President, Reese H. Taylor. Cadwell is now located in San Francisco. Named as the new Manager of the Northwest Territory is A. D. Gass, formerly Seattle District Manager.

A graduate of the University of Oregon, Cadwell joined Union Oil in 1929 as Assistant Stock Clerk in Portland, and became District Salesman in Vancouver in 1934. In succeeding years he was District Representative and Assistant Division Manager in Spokane, Assistant Division Manager in Seattle, and District Sales Manager in Tacoma. He was appointed Manager of the Northwest Territory in June 1949.



F. K. Cadwell

Announcing SOPAC'S

NEW CHEMICAL DIVISION

for

Marine & Industrial Chemical Cleaning

GIL HULL
Chemical Engineer

DICK RICHARDS
Manager

ART HUNTER
Service Engineer

THE BAY AREA'S MOST COMPLETE SHIP MAINTENANCE SERVICE

Men and Equipment Immediately Available for

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—*Benjamin Franklin*

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Fireman's Fund Transfers Lion

Edgar H. Lion, Jr. has been transferred from the head office of Fireman's Fund Group in San Francisco to the organization's service office in Portland, Oregon, where he will assist State Agent George Campbell as a field assistant for the casualty, surety and automobile departments.

Lion joined Fireman's Fund Group in 1948. He held various training assignments in the casualty underwriting department and was appointed an underwriter in 1949. Lion is a native of Oakland, California, and attended the University of California and Golden Gate College. He served with the Army Finance Division during World War II.

Warren Steam Pump Company, Inc. Purchases Quimby Pump Company

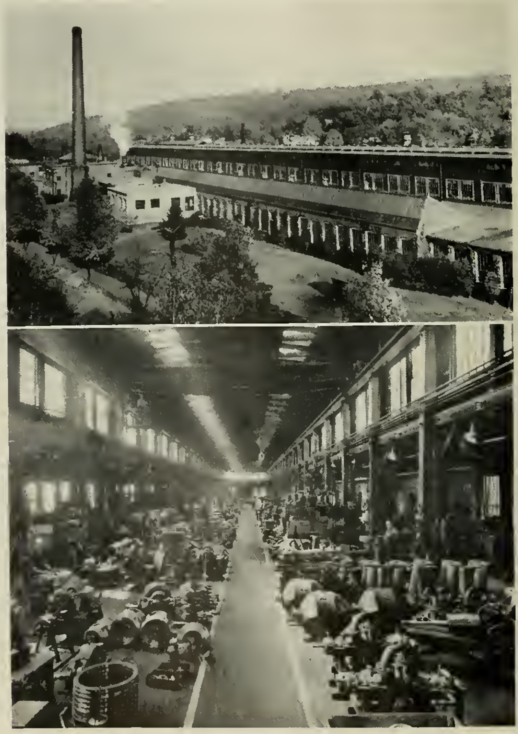
Announcement is made by William W. Shuttleworth, Executive Vice President of Warren Steam Pump Company, Inc., that negotiations have been concluded for the purchase of Quimby Pump Division of H. K. Porter Company, Inc. Pittsburgh, Pa. The original Quimby Company was established in 1893.

The purchase includes inventory, patterns, good will, etc., and all manufacturing will be transferred to the Warren Plant. It is felt by the management that the addition of Quimby Pumps will be a valuable addition to the present Warren line. A repair and spare parts service will be set up to take care of present and future users of Quimby Pumps.

Key men formerly with Quimby have been employed by Warren to supervise the production and application of Quimby Screw and Rotary Pumps, both items being new in the Warren line.

The Warren Steam Pump Company, Inc. was established in 1897 and steam pumps were the original product. In 1924 the Company went into the production of a complete line of centrifugal pumps.

Warren agents on the Pacific Coast include Geo. E. Swett & Co., San Francisco; R. L. Dyer, Seattle; Pump Pipe & Power Co., Portland; and Gil Moore & Co., Los Angeles, and they will now handle Quimby distribution as well.



Top: Warren Steam Pump Company, Inc., Main Machine Shop, where Warren Quimby pumps will be manufactured in the future.

Below: An interior view looking down the center aisle.

Gatov on Federal Maritime Board

Albert W. Gatov, president of the Pacific American Steamship Association for the past 2½ years, has been confirmed by the Senate as a member of the Federal Maritime Board, the second of the permanent three-member Board. He will serve for a term extending until June 30, 1953.

Gatov came to the steamship industry on February 12, 1927 with the Pacific Steamship Company in Los Angeles. He spent fifteen years in steamship operations in Southern California, going from the Pacific Steamship Company to the Inter-Ocean Steamship Company in 1937.

He left the post of Operating Manager for Southern California with Inter-Ocean on January 29, 1942, and entered the U. S. Army. In addition to a term of service as Vessel Control Officer at Fort Mason in San Francisco, he saw overseas service in Khorramshahr, the discharge point in Iran for lend-lease.

He left the Army with the rank of Major, served for a time with the War Shipping Administration in San Francisco, and on March 1, 1946, became Executive Director for the Pacific American Steamship Association. In January of 1948 he was elected President of this Association.

In 1946 he attended, as a representative of the industry, a world meeting of International Labor Organizations in Seattle. The ILO is the only remaining active segment of the World War I League of Nations.

In the second postwar year he served with E. Russell Lutz, then President of PASSA on President Truman's Non-Governmental Committee to promote interest in the International Trade Organization. The I. T. O. is an agency of the United Nations. The activity of this Committee throughout the U. S. was largely responsible for active participation in the I. T. O. meetings in Geneva which resulted in numerous reciprocal trade agreements. In October of 1949 he was appointed to membership on the Committee for the International Trade Organization.

In 1948 he was appointed by Gerard Swope to serve on the Citizens Committee for Reciprocal World Trade. Honorary Chairman of the Committee is Cordell Hull.

He is on the Board of Directors of the San Francisco Marine Exchange, a member of the Merchant Marine and Harbor Committee of the San Francisco Chamber of Commerce, and Vice-Chairman of the San Francisco Maritime Museum Association.

The oath of office as a member of the Federal Maritime Board was administered to Albert W. Gatov, left, by Secretary of Commerce Charles Sawyer in Washington August 29, 1950.

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Western Boat Repair and Construction Activities

All repair activities of Western Boat Building Company, Tacoma, were transferred to their plant No. 1, following the fire in mid-August which completely destroyed plant No. 2. The transfer was made without more than a day of delay.

Lost in the fire was a 98-foot tuna clipper nearing completion as well as a large number of Fairliner pleasure craft in various stages of final construction. The main and auxiliary machinery for the tuna clipper were either in the vessel or at the plant and were total losses.

At the Western Boat Building plant No. 1 the firm has complete repair and construction facilities and two marine railways, one of which is 150′x35′ capable of handling vessels up to 600 tons. During the past war this plant, as well as the one which burned, were used to build and repair vessels for the armed services. Only a limited amount of space will be used to re-establish Fairliner pleasure boat production in plant No. 1, since the plant in being readied for a considerable amount of commercial construction scheduled to start this fall.

Also announced by M. A. Petrich, founder of the firm, is a new program of dock-side work on ocean going vessels for which the firm has complete facilities and equipment. Currently Western Boat is carrying out a number of repair contracts.

Free Zone Exhibit

A $3,000 shipment of Japanese vases was the first Los Angeles Harbor Foreign Trade Zone commodity exhibited to prospective buyers under new laws enacted this year. Dottie Sines, secretary in the new zone, shows vases valued at $300 each. Manufacturing in a zone is also permitted under new legislation.

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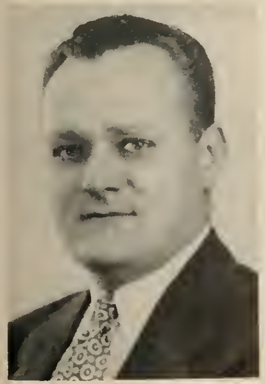
ndrew Liston dvanced by Baldwin

The Baldwin Locomotive Works, ddystone, Pa., has announced the ppointment of Andrew Liston as anager, Hydraulic Turbine and arine Products Department. His ctivities, in addition to the sales of urbines, ship propellers, and other arine products, will embrace the andling of all products of the aldwin brass and iron foundries nd the handling of negotiations ith the Government on products f a special nature.

Liston received his mechanical ngineering education at Drexel Institute of Technology in Philadelphia, and in 1929 he became ssociated with the Hydraulic Turbine Department of I. P. Morris, the century-old Philadelphia firm which, few years later, became an integral part of The Baldwin Locomotive Works. His first assignments were in the Hydraulic Turbine Laboratory and in the Engineering Department where he was engaged in the designing of hydraulic turbines and special products. Later, he was transferred to the Sales Department and, in 1944, was made sales manager for Hydraulic Turbines and Marine Products, which position he held at the time of his recent appointment.

Andrew Liston, Manager, Hydraulic Turbine and Marine Products Department, The Baldwin Locomotive Works.



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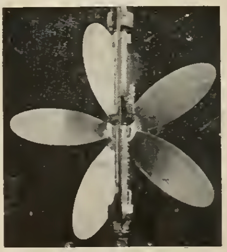

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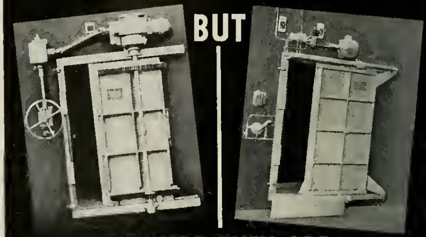

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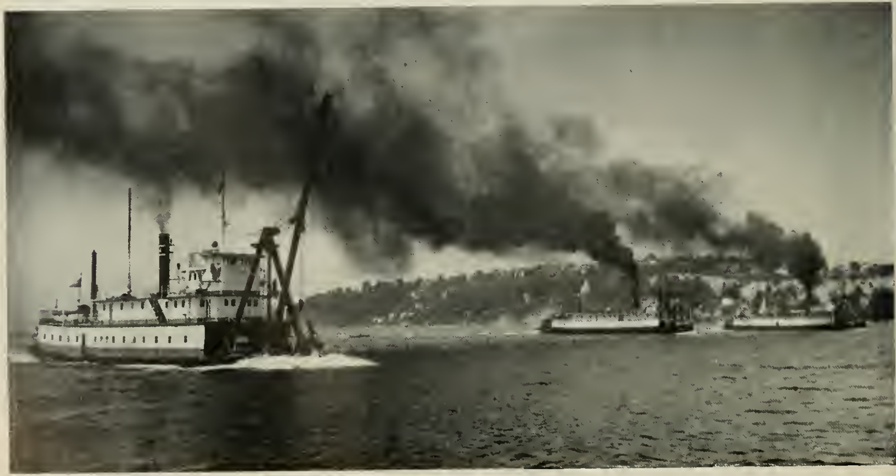
Seattle Sternwheeler Race

During the recent Seattle "Seafair", members of the Puget Sound Maritime Historical Society staged a race between three huge sternwheelers which saw Captain George Murch skipper the Army Engineers snag boat sternwheeler *W. T. Preston* to victory over a course that paralleled the Seattle waterfront skyline. The second place ribbon went to the *Skagit Chief* and the *Skagit Belle* came in third, although the judges decided second place was actually a tie. Both the latter craft are owned by the Skagit River Navigation Co.

Left to right: Sternwheelers "W. T. Preston", "Skagit Belle" and "Skagit Chief".



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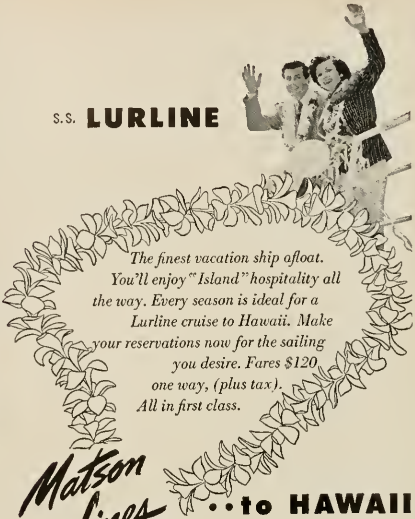

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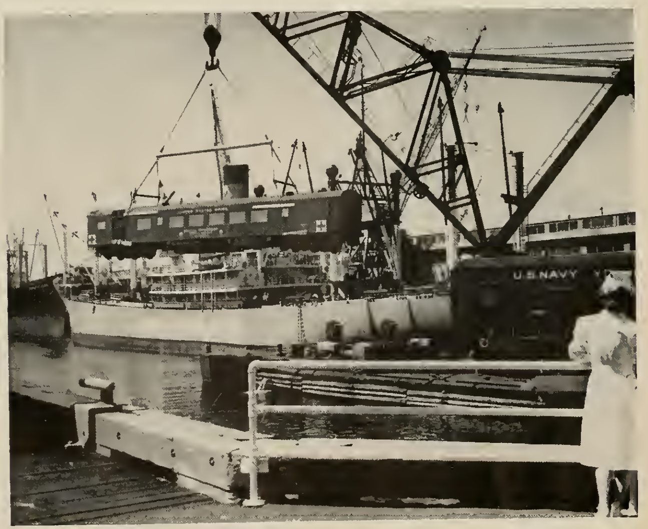

At the Seattle Port of Embarkation an 82-ton hospital ward railroad car is loaded aboard a vessel bound for the Far East, with the aid of a 150-ton floating Navy crane. A port nurse is in the foreground.

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Lidgerwood Appoints Geo. Swett

The Lidgerwood Industries, Inc., announces the appointment of George E. Swett & Co., Engineers, as their Pacific Coast Sales Representative, effective September 1.

The Lidgerwood Industries, Inc. have over fifty years of experience in building electric, electro-hydraulic and steam steering machinery, windlasses, warping, towing and cargo winches, mooring winches, capstans, and have fitted their equipment to, among others, the S. S. *America, President Wilson* and *President Cleveland,* as well as 152 C-1s, General Cargo Purposes Steering Machinery; 30 C-2s, General Cargo Purposes Steering Machinery; 24 P-2s, Transport Type Steering Machinery and Windlasses; 30 C-4s, Troop Ships Steering Machinery; 169 Victory Ships, Steering Machinery; 26 American Export Ships, Electric Winches; 117 C-2s, General Cargo Purposes Windlasses; and Atlantic Refining Co.'s Tankers, Steering Machinery, Windlasses, Deck Auxiliaries; Sinclair Refining Co.'s Tankers; National Bulk Carriers' Bulk Petrol Class Steering Machinery, Windlasses and Warping Winches; and on U. S. Navy Battleship and Carriers, Electro-Hydraulic Steering Gears. There are over 4500 Telemotors in use.

The Swett Company has likewise been in the auxiliary machinery business for 25 years, and has retained James Crough, service engineer for the Lidgerwood Industries, Inc., who will be available for round-the-clock service.

The company's offices will be maintained at 256 Mission Street, San Francisco 5. Telephones, YUkon 6-2100 and 2101. Night phones, FIreside 5-0746, and DIamond 4-2476, and RIchmond 3584-J.

John Reid (right), sales manager of the Marine Division of Lidgerwood Industries, Inc. of New York, explains with this model the workings of the Denny-Brown Ship Stabiliser as W. G. Schalscha, executive vice president, looks on. The company has been appointed sole licensees and manufacturers in the U. S. of the British-developed anti-roll device.

Cremer Anchored

Marc A. Cremer, Secretary-Manager of the Marine Exchange, San Francisco, was married to Cecelia Patricia McCue of San Carlos at a simple ceremony at St. Paul the Apostle Church, Westwood, Los Angeles, on August 12. Mrs. William J. Kelly, sister of the bride, was bridesmaid, and Ray V. Winquist, Vice-President of General Steamship Company, served as best man.

The bride is secretary to the A. B. Spreckels Estate, Mrs. Alma Spreckels and Mrs. Dorothy Spreckels, and is president of the Alumni Association of Notre Dame College, Belmont.

Cremer is also Secretary of the Bay Area Maritime Committee, Secretary-Treasurer of the California Marine Parks and Harbors Association, Vice-Chairman of the board of directors of the Embarcadero YMCA, and Secretary of the World Trade Center Association. He has ably steered the course for many an important maritime project and has made the Marine Exchange a vital factor in the civic and industrial life of the West.

The wedding party. Left to right: Mrs. William J. Kelly, bridesmaid, Mrs. Cecelia McCue Cremer, bride, Marc A. Cremer, groom, and Raymond V. Winquist, best man.

SMART ANSWER

An attorney and his four-year-old son were walking home from church when the small boy looked up with a puzzled expression.

"Daddy, why do they always say 'Amen' when they pray?" he asked earnestly. "Why don't they ever say 'awomen'?"

The lawyer explained as best he could. But the boy seemed unconvinced.

"I think," he said after some deliberation, "that it's because all the songs are hymns."

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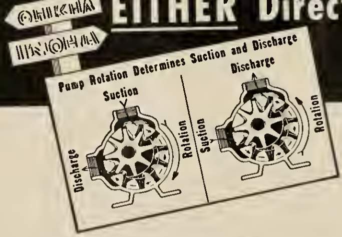

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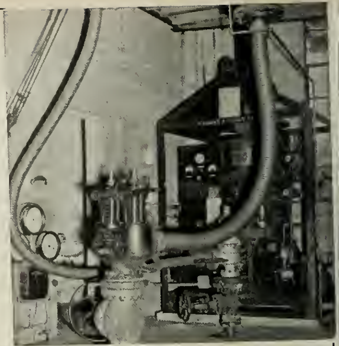

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Chief of Transportation Visits S. F.

A visitor to the San Francisco Port of Embarkation last month was Major General Frank A. Heileman, Army Chief of Transportation. His two and a half days in the San Francisco area were packed with activities including visits to Port Headquarters, the Fort Mason passenger facility and cargo terminal at the Oakland Army Base within the Port itself, headquarters of the Sixth Army, the Navy ammunition loading facility at Port Chicago, and the Camp Stoneman personnel center.

He conferred with Major General James A. Lester, Port Commander; Col. C. J. Wilder, Chief of Staff to the Port Commander; Col. Howard Malin, Chief of Oversea Supply Division; and with the Chiefs of Port staff and operating divisions.

He also addressed a capacity joint meeting of the Pacific Railway Club and the San Francisco Chapter of the National Defense Transportation Association at the Sir Francis Drake Hotel, arranged by Louis Chess, president, and Col. James Sullivan, secretary, of the San Francisco Chapter. Steamship companies, railroads, airlines and truck lines were grouped by tables decorared with their company insignia.

Major General Frank A. Heileman, Army Chief of Transportation, addressing joint meeting of Pacific Railway Club and S. F. Chapter, National Defense Transportation Association, at Sir Francis Drake Hotel, San Francisco, August 17.

U. S. Army photograph

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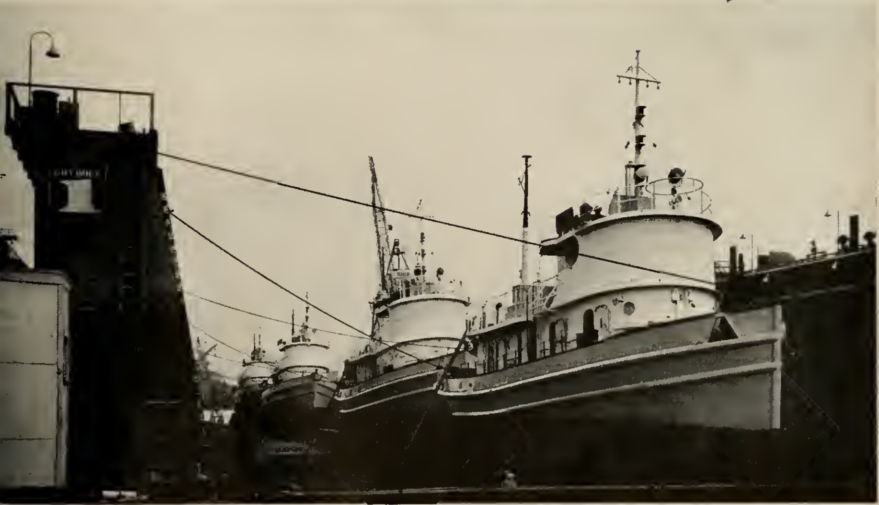

Vessels being removed from mothballs for wartime duty vary in sizes as well as in types. Here is a scene at one dry dock at the Alameda, Calif., plant of Todd Shipyards Corporation showing four Army ST-type tugs being readied for service. These "waterbugs" were removed from the Army's small boat reserve fleet at Mayberry Slough by the San Francisco Port of Embarkation and will be used in the docking and undocking of large vessels in San Francisco Harbor.

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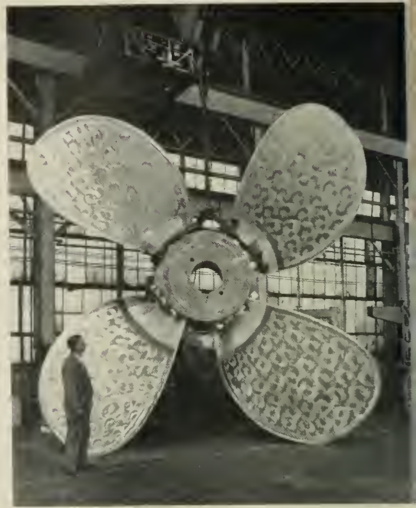

This built-up ship propeller, built by Baldwin Locomotive Works and said to be the largest so far built in the United States, was manufactured for one of the 30,000 ton tankers under construction by the New York Shipbuilding Corporation for Philadelphia Tankers, Inc. The ships are 625 feet long, 85 feet wide and 45 feet draft, with 18,000 HP turbine propulsion.

The huge propeller is 22 feet in diameter and has a finished weight of almost 71,500 pounds. The four separate manganese bronze propeller blades are bolted to a central hub of cast iron. The blades are highly polished and their mottled appearance is caused by light reflections from the distinctive pattern made by the polishing tool.

Consolidated Appoints Edgar Martin Company

Edgar Martin Company of San Francisco has bee appointed as Sales Agents for Consolidated Diesel Elec tric Corporation of Mount Vernon, N. Y. Consolidate has specialized in high grade "Packaged" Diesel Genera tors for more than ten years and supply units from 5 KW to 150 KW for both marine and stationary service. The also build switchboards of all types and sizes, and hav fabricated at their plant single switchgear orders amount ing to nearly a million dollars.

The Edgar Martin Company is distributor also for full line of top flight coatings, including Amercoa (avinyl plastic), Rust Tox (over rusted metal), an Ospho (the rust converter) as well as Aluminum hea resisting coatings, and also distributor of gas generator manufactured by the Vapofier Corporation.

Vibration . . .

(Continued from page 57)

wipe the stator to destruction. So we must balance. The unbalance not detectable on the level parallel rails is only detectable while running, and the centrifugal forces come into the picture. This balancing operation is called the 'dynamic' balance; its cause is the dynamic unbalance. It is, of course, very difficult to run a high speed rotor at full speed in the shop unless in its own bearings and stator, in which case we could not easily get at it. But it is much better to spring-mount some smooth temporary bearings and roll the rotor with a small belt at 150 to 300 revolutions per minute by adjusting the strength of the springs and the weights of the bearing supports to bring the natural vibration rate, or natural critical, tuned to the speed at which is running. Or we change the speed until it does oscillate at the widest swing like a pendulum. (Fig. 4.) In the dynamic balancing machine shown here the flexible spring allows a sidewise rocking motion, and the weights help tune the system. Another machine carries the rotor in bearings supported in a cradle which allows one end to move up and down, the other end to remain fixed as far as up and down are concerned. It, too, is spring supported and weighted for tuning. The small dynamic unbalance in a 4000 RPM rotor which causes a noticeable vibration in the turbine will now show up as a wide swing, perhaps a quarter of an inch or so. Temporary weights are added to the rotor until the swing is reduced to zero at the one end. It is then turned around and the other end balanced. Usually the machine is so equipped that the flexible bearing is made rigid and the rigid bearing is now made flexible. There is, of course, more to it than this. Calculations are made to allow for the axial location of the correcting weights with respect to the axial location of the rigid bearing. Also final permanent weights are usually not the same distance from the center as the temporary ones. Corrections must be made."

McCoy spoke up. "I've seen guys come aboard ship with a box and some electrical gadgets and do the job running in the machine's own bearings."

"Yes, that can and has been done. A magnet in a coil is made to vibrate by the vibrating bearing. Another magnet in a very small two pole stator of an AC generator attached to the machine shaft causes an AC voltage in the meters of the box. This AC voltage is combined with an AC signal coming from the vibrating coil, and gives a total signal which varies on the meters as the stator of the little AC generator is turned by hand. It is turned to give maximum signal, and again minimum signal, and the position of the AC stator is read off in degrees. By doing this with and without temporary weights, data is obtained and graphs can be drawn telling us where to put the permanent weights. Readings at both ends are taken, of course. It is not used much because of difficulties of attaching to the end of the shaft and because the results are not so positive. For good balancing the high magnification of balance error is needed, as is used in the free bearing-tuned type of machine."

Frank Farran paused, then looked over the group. He continued. "George, announce that the subject for the next seminar will be Gas Turbines. It will be a long time before they will be important in marine work. But there is no harm in talking about gas turbines and so it shall be."

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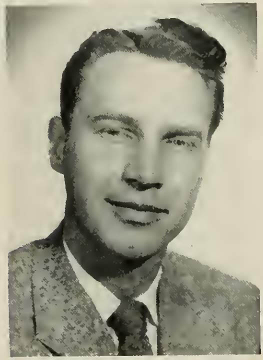
Roebling Appoints Johnson

George C. Bukowsky, Manager of the San Francisco branch of John A. Roebling's Sons Co. of California, announces the retirement of Phil Eldridge, and the appointment of George W. Johnson as Marine Sales representative in the San Francisco Bay region. Johnson was formerly with the Roebling organization in the Portland, Oregon, district where he worked with the marine industry.

A native of Portland, Johnson graduated from the University of Portland, and had a year of graduate work at the University of California. He served five years in the Navy and was promoted from Aviation Cadet to Lieutenant in Naval Aviation.

Phil Eldridge joined the firm in 1912 and has been an important figure in the maritime fraternity for over 38 years.



George W. Johnson

Nickerson Promoted by Devoe & Raynolds

Walter E. Nickerson of Brocton, Mass., has been named manager of the Marine Sales Division of Devoe & Raynolds Company, Inc., to succeed the late William O'Callaghan. Nickerson joined Devoe in 1934 in Boston and was promoted to the Marine Sales Department in 1942. He was placed in charge of marine sales in New Orleans in 1945 and remained there until recently when he was appointed assistant to O'Callaghan.

Carl Friend of Nordberg Advanced

Carl O. Friend has been appointed Manager of the Gasoline Marine Engine Department of Nordberg Manufacturing Company, Milwaukee, according to an announcement by James A. Friend, Senior Vice-President. Carl Friend will assume the duties of H. Van Schaack, who has resigned.

W. G. Hawkins and W. F. Reeder will assist in Gasoline Marine Engine sales and service from the Milwaukee office of Nordberg. Personnel assigned to Gasoline Marine Engine sales and service in Nordberg's district offices will remain unchanged.

Friend attended the University of Wisconsin and Cornell University. He joined Nordberg in the Crusher Division in 1941 and the following year enlisted in the U. S. Coast Guard where he served three years in anti-submarine patrol duty off the Atlantic Coast.

After the war, Friend returned to Nordberg and served in a business administration capacity. In 1948 he was appointed Sales Research Department manager in charge of all advertising, publicity and sales promotion activities of the company.

Carl O. Friend

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New Type of Auto Sling

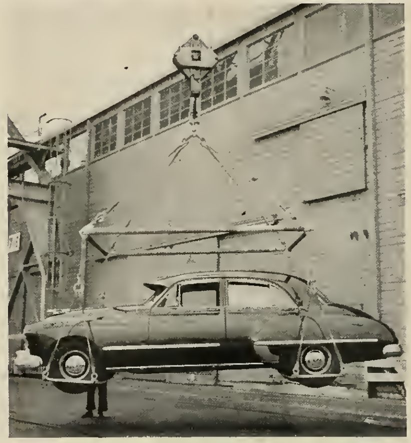
A new type of automobile sling, readily adjustable to new and old model cars is speeding loading, and discharge of automobiles and is protecting them from damage, at the San Francisco Port of Embarkation. The sling has speeded loading almost 100 per cent, permitting handling of eight vehicles an hour as against a rate of four and one-half attained by use of rope and wire slings, and sling-caused damage has been completely eliminated.

The sling was invented by Lt. Col. Herman R. Fleming, a Transportation Corps officer formerly on duty at the Port and now serving overseas in the Pacific.

Of simple construction, it combines qualities of strength, flexibility and adjustability necessary for safe hoisting and lowering of automobiles of varied design in confined areas. It insures safer and better handling of new model cars having wider and lower fenders and larger bumpers.

The sling consists of a rectangular head frame of 1½ inch heavy pipe and two wheel cradles of 1½ inch round bars joined by half-inch wire rope. The head frame is adjustable from front to rear so that the wheel cradles can conform to the varied wheel base lengths of modern automobiles, creating an inclined sling.

The inclined feature shortens the overall length of larger autos to permit their loading through vessels with small hatch openings.



New type of auto sling being used to hoist vehicles into hold of vessels.

The wheel clamps consist principally of two finger hooks which go around the top side of the tire and which are joined together in a hole-punched bar which permits adjustment to the wheel diameter. An ordinary pelican hook is used to tighten the clamps and make them fast.

Hagan Corp's New L. A. Office

A new Los Angeles district office has been established at 3931 Tweedy Boulevard, South Gate, California, by Hagan Corporation, Pittsburgh combustion and chemical engineering firm, and its subsidiaries—Calgon, Inc., Hall Laboratories, Inc., and The Buromin Company. The new telephone number is LOraine 6-6158.

The office also will represent Bull & Roberts, which is associated with Hagan Corporation and subsidiaries in the marine engineering field.

The Los Angeles district office formerly was located at 1807 East Olympic Boulevard, Los Angeles.

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Plastic Packing with "Tape-Back" Prevents Breakage

Crane Packing Company of Chicago, has announced the addition of a special new feature to its "Super Seal" Plastic Packing. A securely vulcanized tape-back is now offered as an integral part of all "Super Seal" spiral packings.

Elimination of the normal breakage which occurs in twisting-down means that none of the packing need be thrown out because of handling damage.

A new securely-vulcanized tape backing that gives greater flexibility, extra economies, and easier identification is now a feature of all JOHN CRANE "Super Seal" Plastic Packings. By increasing flexibility, the new backing allows packing spirals to be twisted down to small shaft sizes and then cut into rings without breakage. Identification of "Super Seal" is simpler with the new tape-back, since each style of packing is clearly marked in a different color.

The "John Crane" Super Seal line of packings is furnished in six different styles to cover the range of operating conditions met throughout industry. They are extremely resilient and homogeneous, and are composed of asbestos, anti-frictional metal particles, flake graphite, and special binders. They need not be removed as wear occurs. The addition of an additional ring to the stuffing box is sufficient to maintain leak-proof service.

A special booklet offered by the manufacturer describes the entire Super Seal line and includes full service recommendations. Write Crane Packing Company, Department N-26, 1800 Cuyler, Chicago 13, Illinois.

New Marine Accessory

An Enlarged Scale Steering Repeater with distinct advantages over the standard model has recently been introduced by Sperry Gyrocope Company. As implied in the name, its primary advantage is the expanded scale of the repeater card which permits reading of the ship's heading from a distance of several feet. Its design has eliminated the need for a magnified reading glass and cover. The price is therefore lower

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than the standard model with which it is interchangeable. Though the repeater is the same size as the model known to mariners for a quarter of a century, it has a card with degree graduations equivalent to those of a compass card 30 inches in diameter.

Booklet on Electrodes

A booklet on "The ABC's of Welding High Tensile Steels" has just been issued by Arcos Corporation, welding electrode manufacturers of Philadelphia, Pa., to guide buyers and users of low alloy, low hydrogen electrodes.

It shows the importance and effectiveness of low hydrogen electrodes in welding low alloy, high tensile steels, mild steel under highly restrained conditions, and sulphur-bearing free machining steels.

In simple question and answer form, the booklet compares mild steel and low hydrogen electrodes, as related to preheating, underbead cracking, moisture in the arc and in the coating, burn-off rate, cost of operation, applications, and stress relieving of the weldments.

"Diemerdyk"

(Continued from page 47)

tion, and each is supported in two journal bearings of the split type, lined with babbitt.

Forced lubrication for the turbine and gear bearings, the gear mesh, and the main thrust bearing is supplied from the ship's lubricating system.

A motor-driven turning gear unit is provided for connection to the high speed high pressure pinion, to rotate the propeller shaft about one revolution in six minutes. The turning gear is arranged with a jaw-type clutch fitted with a handwheel for engaging and disengaging. The high speed low pressure pinion is provided with a square for application of a hand turning wrench.

The weight of the main turbines with accessories and maneuvering valve assembly, excluding the condenser, is approximately 74,000 lbs. The weight of the main reduction gear unit is approximately 185,000 lbs., bringing the total weight of the turbine gear set, less condenser, to approximately 249,000 lbs.

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OCTOBER 1950

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Pacific MARINE REVIEW

Coming Our Way?

WITHIN the last few weeks several things which have been budding for some time have suddenly blossomed to brighten the outlook for the Maritime industry. Because they are diversified in type the prospect is the more pleasing. Although it is one of the most ardent supporters of the Merchant Marine, the American Legion is reaffirming its policy and the American Federation of Labor is making shipping and shipbuilding a major interest. Various government departments are recognizing the Merchant Marine as vital to defense, and even the State Department will at times concede its importance. The Budget Bureau cannot dictate indefinitely if Congress determines otherwise.

But in the direction of actual prospects for ship construction and expanded trade we find the American President Lines planning for seven new passenger-cargo vessels, Great Lakes ore carriers ordering eight large freighters, the Navy to build a flush deck carrier and to allot fifty per cent of Naval ship construction to private yards. Then there is the new defense outlook. An Army Transportation officer told the American Merchant Marine conference that even assuming no further flareup of hostilities the movement of armies to friendly foreign shores will require 1530 vessels ranging from large transports and cargo ships to small personnel carriers and tank carriers. The General went on to say that since this does not take into account the supporting technical and administrative forces, nor the continuing necessity for replenishment of supply, nor our current military aid to friendly nations, nor even normal international commerce, it would appear that the American Merchant Marine will become an ever-increasing factor in the status of our national defense.

The ship mentioned on page 22 is a "prototype" and it is expected that upon agreement on final plans a certain number of them will be built. The estimate of the number ranges from ten to fifty.

There is yet another vessel-building trend which we have been watching with lively interest. That is the inland waterways types, such as barges, tugs, ferries, and bulk carriers of various kinds. Many of these are being built and there are opportunities opening up in this category which are capable of development, especially with rail rates going up. More on this later.

New ships, new loading methods, new constructive spirit in the industry—while there is time—reminds us again of Noah. He was no procrastinator. It wasn't raining when he built the Ark. He knew that the time to prepare for rain is when the sun is shining brightest.

"President Adams" Launched

—but transferred immediately to the Navy

DESIGNED for tourist travel, destined now for duty as a 2,500-man troop transport, the 536-foot S. S. *President Adams* was launched from the ways of the New York Shipbuilding Corporation at Camden, N. J., October 9.

Because the possibility had been foreseen that the *President Adams* and her two American President Lines sister ships, the S.S. *President Jackson* and S.S. *President Hayes,* might someday be needed for defense duties, plans for the ships were drawn with conversion in mind.

Right from the start they were a potential national defense asset and the launching ceremony was pitched to the atmosphere of a "Naval Reservist reporting for duty." High-ranking Navy officers crowded the launching platform.

Mrs. Edward J. Hart, wife of the Jersey City Congressman who is chairman of the House Committee on Merchant Marine and Fisheries, sponsored the vessel; Rep. Hart delivered the principal address.

Still swathed in scaffolding, the S.S. *President Hayes* is nearing completion on ways adjoining those from which the *Adams* was launched. A few hundred yards away, the S.S. *President Jackson*, launched June 27, lies at a "wet-basin" fitting deck.

"President Adams" leaving the ways.

At launching of "President Adams", left to right: Congressman Edward J. Hart; Mrs. Edward J. Hart, sponsor; and T. H. Bossert, President of New York Shipbuilding Corp.

In a spectacular gesture, intended to stress the "Naval Reservist" angle to the launching, 500 civilian-owned homing pigeons, themselves Army Signal Corps "Reservists," were liberated from cages on deck as the *President Adams* slid into the waters of the Delaware River.

Racing to their home lofts in a dozen Jersey communities within a 200-mile radius of Camden, the birds carried a "message" announcing that:

"The S.S. *President Adams,* newest addition to America's Defense Transport Fleet, has been launched."

With their three new ships "called up" for defense duty, American President Lines is already planning to replace them. Within a few days after the mid-September announcement that the Navy wanted them, George Killion, president of American President Lines, said in a New York interview that specifications on seven new vessels would be presented to the Federal Maritime Board.

The line now operates some thirty-five vessels, including the *Presidents Polk* and *Monroe* in round-the-world service, and the much larger *President Wilson* and *President Cleveland* in the Pacific. Most of the balance of the APL fleet is made up of "cargo-liners" which carry up to 12 passengers each on routes through the Pacific from San Francisco to Australia and return.

APL is exploring the possibilities of new routes which may include expanded inter-coastal and Latin American runs.

Top: Vice-Admiral E. L. Cochrane, Chairman of the Federal Maritime Board (left) clasps hands with George Killion, President of American President Lines, and the Honorable Dan A. Kimball, Under-Secretary of the Navy, at the Camden, N. J. launching of S.S. "President Adams". The three-way handshake, all three men declared, symbolized the turning over to the Navy, for transport duty, of the three APL ships, "President Jackson", "President Adams" and "President Hayes". Designed as cruise ships, they'll carry 2,500 troops as they begin their service early next year. The "President Jackson" was launched June 27, and the "Adams" October 9. The "Hayes" will be launched early in December.

Bottom: T. H. Bossert, President of New York Shipbuilding Corporation, as he spoke at the launching of the "President Adams".

Welding Conference

–Buckling of Plates

–Stress Redistribution

The following are abstracts of papers presented before the 31st Annual Meeting of the American Welding Society, Structural Session, in Chicago on October 25.

Buckling of Intermittently Supported Rectangular Plates

By C. H. Norris, D. A. Polychrone and L. J. Capozzoli, Massachusetts Institute of Technology

This paper deals with a research project being conducted in the Structural Analysis Laboratory of the Massachusetts Institute of Technology under the sponsorship of the Structural Steel Committee of the Welding Research Council. The ultimate objective of this program is to develop reliable specifications governing the use of intermittent fillet welds to connect the component parts of structural members.

Intermittent welds may be more than adequate to satisfy the strength requirements of a connection, but the clear space between such welds must be short enough to preserve the local buckling resistance of the component parts of the member. The determination of the local buckling characteristics of welded struts and flexural members reduces in many cases to a study of the buckling of long rectangular plates compressed on the ends and supported on the long sides in various manners.

This project has therefore been divided into four phases. Phase I is a theoretical and experimental study of the buckling behavior of long rectangular plates intermittently supported on one or both long sides by a simple support and uniformly compressed on the ends. Phases II and III are similar but designed to study the effect of clamping the long sides and of a non-uniform end compression, respectively. Phase IV, now in progress, involves testing typical structural members, and comparing their actual performance with the local buckling behavior predicted from Phases I, II, III.

Final recommendations must await completion of Phase IV, of course. Tentatively, it has been concluded, however, that present specifications regarding the maximum permissable gap between intermittent fillet welds are reasonable.

Stress Redistribution Above the Elastic Limit For a Welded Frame

By L. E. Grinter, Illinois Institute of Technology and Charles G. Peller, Valparaiso University

With the advent of modern steel structures and the present method of welding, rigid frames are being used both in bridges and buildings. The trend may soon be in

(Continued on page 71)

The New Prototype Cargo Vessel

—This May Be the Big News in Shipbuilding

INVITATIONS to bid on preparation of contract plans and specifications and working plans for a 20-knot National Defense type cargo ship have been issued by the Maritime Administration, Department of Commerce. Maritime Administrator Admiral Cochrane explained that much of the preliminary planning had been done by the technical staff of the Maritime Administration. Shipbuilding companies and designers asked to bid on preparations of the plans include: George Sharpe & Associates; Gibbs & Cox, Inc.; Ingalls Shipbuilding Co.; Bethlehem Steel Co., and Newport News Shipbuilding & Dry Dock Co.

Admiral Cochrane said that sea transport logistics had been gravely affected since the end of World War II by various military factors. Much has been done, he said, in the development of tanker design to meet modern conditions, but that there was a vital need now to produce dry cargo vessels that could "move stuff in a hurry and with security, capable of carrying bullets and beef for soldiers."

The National Defense vessel would carry two and one-half times as much cargo per year as the famous Liberty ship of World War II, he said.

"There are fewer than a hundred of the faster type cargo ships left in our reserve fleet right now," Admiral Cochrane said, referring to the Victory ships. One hundred and thirty-six of this type have already been placed in active service.

The dimensions of the new ship are indicated as 525 ft. between perpendiculars and 576 ft. overall. Beam is 76 ft. and draft 30 ft.

These figures compare with certain other types roughly as follows: The C-2 is 460 ft. with 63 ft. beam; the C-3 is 492 ft. with 69 ft. 6 in. beam; the C-4 is 523 ft. with 71 ft. beam. The P-2 is 609 ft. with 75 ft. 6 in. beam; and the T-2 tanker is 523 ft. with 68 ft. beam.

The draft of 30 ft. on the new ship is greater than that of any other wartime cargo types except the C-4 and is of special interest because of the constantly recurring talk of a St. Lawrence waterway, the depth of which would seem to preclude its use by any of our modern freighters except the C-1.

It will be noted in the inboard profile herewith that provision is made for 7 cargo holds. The hatch sizes seem to be well planned. Hatches Nos. 3 and 6 are 37 ft. 6 in. long by 24 ft. wide. There are many features of the design which are fully flexible in order to permit conversion to an A.K.A. naval auxiliary type.

Under the directions given to the Maritime Commission by Congress, the design of the vessel must include all Navy requirements but in the actual construction certain features may be omitted so that the greatest value as a cargo vessel may be realized. In order to incorporate as many desirable cargo features as possible, the Commission addressed a letter to associations of ship owners for distribution among their members in which the Commission invited comments on construction features. An indication of the range of possible design change is indicated by the following questions.

Does your company have either an immediate or prospective need for tonnage of the type described?

A ship of the size and speed outlined appears to be suitable for a combination cargo-passenger version with about 100 passengers or more. Would your company be interested in such a version?

The vessel is presently designed as a shelter decker with a maximum draft of about 29′-8″. Assuming full bunkers for approximately 12,000 miles radius at 20 knots, full reefer cargo of approximately 770 tons, and full liquid cargo of approximately 1500 tons, the stowage of dry cargo would be about 73 cubic feet per ton. If all the cargo deadweight, except the reefer, is in dry cargo, the stowage factor would be reduced to about 63 cubic feet per ton. It would be possible to scantling this vessel to a maximum draft of approximately 33′-0″ as a full scantling ship with a corresponding increase of approximately 3000 tons in deadweight. Under these conditions, is it considered desirable to scantling the ship for a draft in excess of the shelter deck draft, and if so, what minimum stowage factor for dry cargo would be acceptable?

Is the cargo space properly apportioned between bale, refrigerated, and cargo oil? If not, how should it be apportioned?

Are accommodations for 12 passengers desired?

Are refrigerated stores and dry stores adequate as shown; if not, what is your recommendation?

Cargo hatches are shown 24′ wide on the present arrangement. Greater width is possible at the sacrifice of deck area. What is your recommendation?

What lifting capacity is considered desirable for the boom arrangement shown?

What is the maximum load recommended for buttoning?

If a higher lifting capacity is desired, do you recom-

◀ Inboard profile of the proposed prototype.
Plans are subject to many changes to meet operators' requirements.

mend that double drum winches for each swing boom be installed?

Do you recommend topping winches for positioning on loaded booms?

What is your recommendation for outreach and boom length?

Would you recommend any special type of cargo handling gear, and if so, what type?

Present plans call for use of A.C. current throughout. Under these circumstances, what would be your recommendation concerning the driving system for cargo winches?

The preliminary general arrangement indicates two double drum winches capable of handling 60 tons load in way of quadrupod masts. Would it be acceptable to maintain these masts and winches for commercial operation?

Do you recommend the installation of quick opening type of hatch covers on the weather deck? If not, what type of cover is desired?

What type of hatch covers are desired for the tween decks?

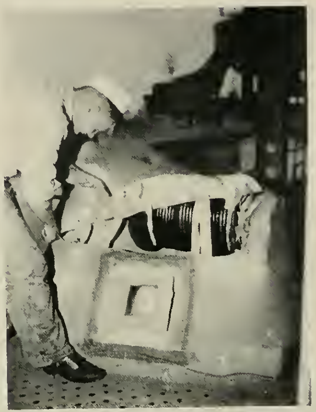
Is cargo dehumidification desired?

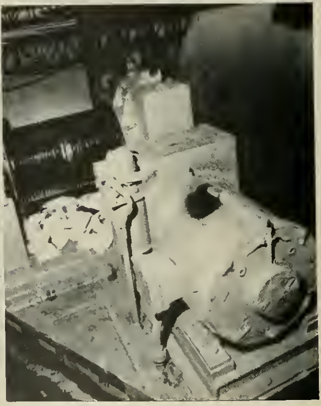
The present arrangement provides for cargo oil stowage in two different types of tanks. Those shown aft, between frames 134-155, are completely cofferdammed. With all supporting structure on the outside of the tanks, this arrangement permits smooth inside surfaces, easy cleaning, and eliminates any danger of contamination, although it necessarily involves sacrifice of space. Some operators have recently been specifying this type of tank. Please state your preference between the cofferdammed type and the usual deep tank indicated between frames 39-60.

The extent and shape of the midship house has been dictated by the requirements of the naval auxiliary vessel, which include installation of guns, banked landing crafts under davits, spaces necessary for the military operation of the vessel, etc. The crew quarter arrangement indicated is very preliminary and subject to modifications, which, however, must be worked into the spaces indicated in order to preserve the functions required for military operation.

When final plans are released or further progress made in the direction of construction, we will convey the information to the industry in general.

Removing the Navy's Mothball Covering





In less than thirty minutes, the winch in these pictures was stripped, lubricated and ready for service after being sealed in Vinylite resin-based film for four and a half years. The pictures were taken aboard a Navy aircraft carrier. The moisture-resistant film seals many pieces of deck equipment in the Navy's "mothball fleet" from the elements. In a typical ship reactivating operation, the coating was slit with a knife and stripped off in a few minutes. With the aid of bags of moisture-absorbing silica gel (upper and lower right photos), the film covering preserved the winch so that it required only lubrication—which took just 20 minutes—before being put into service.

Resistant to oil, grease, rot, mildew, fungi and most chemicals, the tough film is also non-flammable. The film is applied in liquid form—sprayed over a framework of pressure sensitive tape which has been built up around the object to be sealed. First a solution containing Vinylite resins and a webbing agent is sprayed over the tape to produce a cobweb-like form. Then additional coats of the Vinylite resin-based solution are sprayed on to protect against moisture, sun's rays and general weathering conditions. Windows of transparent Vinylite plastic rigid sheet are sealed into the film to permit inspection of instruments recording temperature and humidity inside the sealed covering (upper left photo).

Seagoing Hopper Dredge "Sandpiper"

By J.. A. WASMUND
Marine Engineer, Westinghouse Electric Corporation
East Pittsburgh, Pa.

SEA TRIALS of the seagoing hopper dredge *Sandpiper* were conducted over a four-day period from May 18 to 21, 1950. *Sandpiper* was designed and constructed for use primarily in Lake Maracaibo, Venezuela-Bar-Lake-Channel Dredging Operations participated in by the group comprising the "Marine Conference on Lake Maracaibo Bar Operations". This group includes the Creole Petroleum Corporation, Shell Caribbean Petroleum Company, Mene Grande Oil Company C. A., Texas Petroleum Company and Richmond Exploration Company. On behalf of the Creole Petroleum Corporation specifications and plans were prepared by the Marine Department of Standard Oil Company (New Jersey) under whose supervision and inspection the construction of the vessel was carried out. The *Sandpiper* is registered under the Dutch flag at the port of Willemstad and is owned and operated by N. V. Curacaosche Scheepvart Maatschappij of Emmastad, Curacao, N. W. I., which, like the Shell Caribbean Petroleum Company, is one of the Royal Dutch Shell group of companies.

The dredge is 250′ in length, with beam 46′ and depth 18′0″. A view of the ship underway can be seen in Fig. 1. The displacement is 3600 tons and the hopper capacity for full-load condition is 1100 cubic yards. Normal full-load propulsion shaft horsepower is 2000 equally divided between two propellers. Full-load designed speed of the vessel at 2000 shaft horsepower is 11 knots. The complement of the vessel consists of 41 persons in the operating department. In addition to these, accommodations are provided for three supercargoes.

The *Sandpiper* was built at the Montreal Shipyard of Canadian Vickers Limited. For the sea trials, the vessel

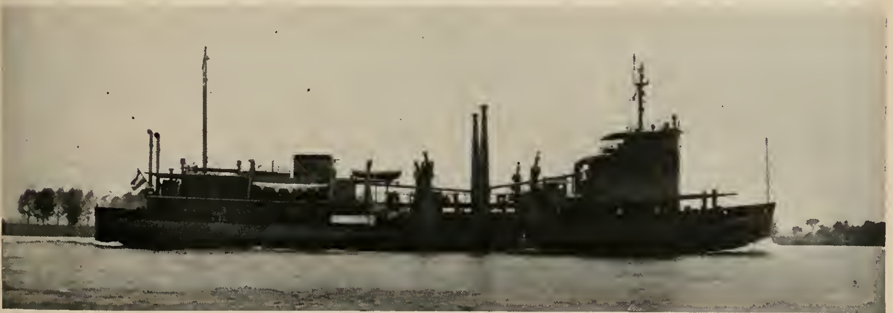
James A. Wasmund, the author, received his B.S. in Electrical Engineering from the University of Nebraska, and his M.S. from the University of Pittsburgh. He was a student trainee at Westinghouse Electric from 1929 to 1930 and taught Electrical Engineering at the University of Pittsburgh from 1930 to 1939. He has been a Marine Engineer at Westinghouse since 1939.

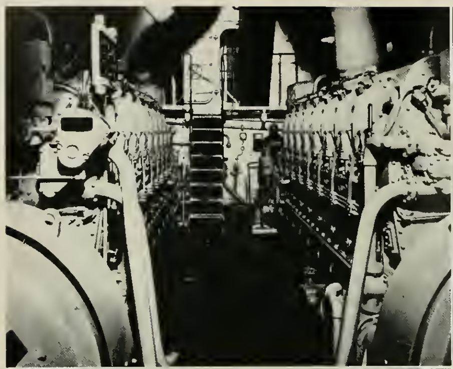
He is responsible for the application of AC turbine, electric drive on T2-SE-A1 Class US Maritime Commission tankers and Owasco Class US Coast Guard Cutters; Diesel electric drive on wind class US Coast Guard Ice Breakers and US Navy destroyer escort vessel; DC turbine electric drive on comber class US Engineer Maritime Commission Type CS.

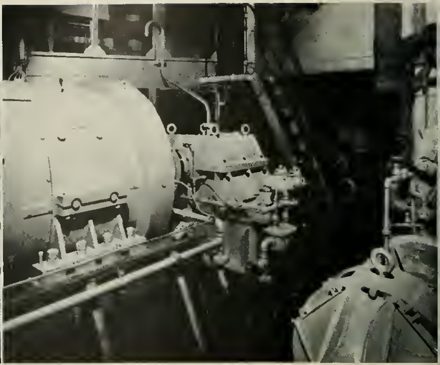
He is the author of numerous papers and articles appearing in marine publications, and is a member of the American Institute of Electrical Engineers and the Society of Naval Architects and Marine Engineers.

All illustrations courtesy of Canadian Vickers Shipyard.

Fig. 1: The dredge "Sandpiper" in the St. Lawrence River during trial run.
Full-load designed speed is 11 knots.







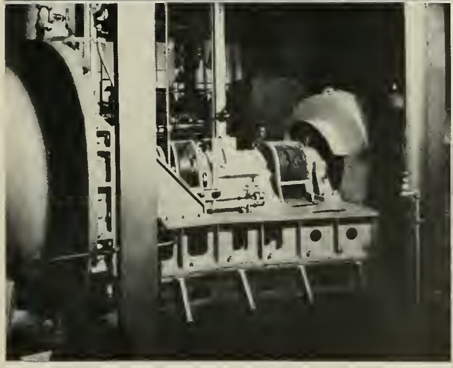
Top left, Fig. 3: Diesel engines drive the two 800-kw generators seen in the foreground. Power supplies for each of the two screws including engine, generator, and motor are independent units.

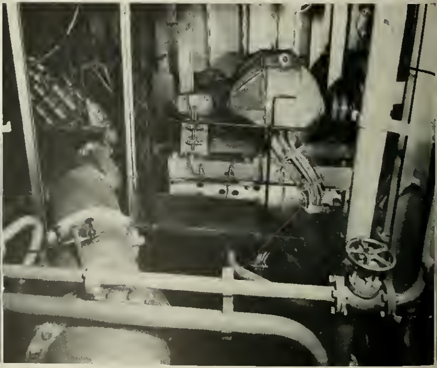
Top right, Fig. 4: Two 1000 HP, d-c motors drive the propellers through reduction gears. The starboard and vertically offset reduction gear can be seen in this view.

Center, Fig. 5: Two of the three propeller speed control stands in the pilot house can be seen in this view. All three stands are connected mechanically so the operator can move his position for best visibility. Starboard and port propeller speeds are controlled individually by right- and left-hand control levers at each stand.

Bottom left, Fig. 6: A single dredge pump driven by a 600 HP motor provides suction for both draglines. The dredge pump is to the left and the driving motor to the right in the above illustration.

Bottom right, Fig. 7: The drag-hoist motors are powered by the two-motor-generator sets seen in the background. Precise control is obtained by varying the field strength in the small exciters seen on the left of the motor generator sets.





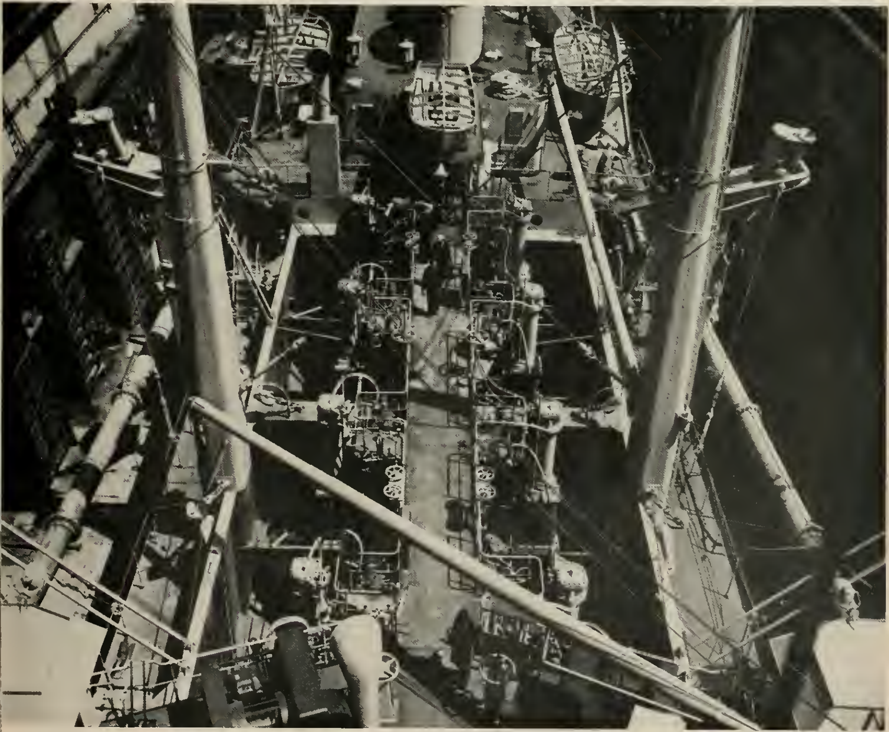
proceeded some 200 miles down the St. Lawrence River to Murray Bay where the measured-mile speed tests were conducted. The hoppers were filled enroute to provide ballast for the tests. The six-hour, full-power run was made on the return trip, five loads of assorted material being dredged and dumped. The approximate time required to fill the hoppers to capacity was 30 minutes. Fig. 2 shows a view of the hoppers.

The power plants for each screw are independent units, each consisting of a General Motors 750 diesel engine driving in tandem an 800-kw, 600-volt Westinghouse propulsion generator and a 500-kw, 240-volt d-c auxiliary generator as shown in Fig 3. Each of the ship's propellers is driven by a Westinghouse 1,000-hp, 785/875-rpm, 600-volt separately excited shunt-wound, d-c motor, through a Westinghouse single-reduction, vertically-offset 135/150-rpm (maximum operation) gear unit. One of these motors with its reduction gear is shown in Fig. 4. Each propulsion-generator armature is connected permanently to the corresponding motor armature. Control of the propeller speed, from full ahead to full astern, is obtained by varying the generator voltage from zero to full voltage in either direction, while the motor excitation is kept constant. The generator voltage is varied by changing the generator exciter field current from zero to maximum in either direction by means of duplicate reversing potentiometer rheostats located in the engine room and pilot house speed controllers.

Selection of "engine room" or "bridge" propeller speed control is made by means of a selector switch on the engine-room control board. In most cases "bridge" control is much preferred since response to commands is instantaneous rather than being relayed through two people and an engine room telegraph system. Three pilothouse control stands are provided, two of which can be seen in Fig 5. Control from the bridge is an extremely simple operation. All three of the bridge control stands are identical in external appearance and the levers are connected mechanically so that the operator may shift his position from stand to stand in order to obtain a point of maximum visibility. Each stand has two operating levers; the left-hand lever controls the port propeller speed and the right-hand lever the starboard propeller speed. In the center position, lever vertical, power is off. By moving the lever forward the motor is caused to turn

(Continued on page 77)

Fig. 2: Hoppers will hold 1100 cubic yards. Average time to fill the hoppers to capacity was found during the trial run to be 30 minutes



C-2 cargo vessel of the type for which the tailshaft described in the text is intended.

The Machining of Tailshafts

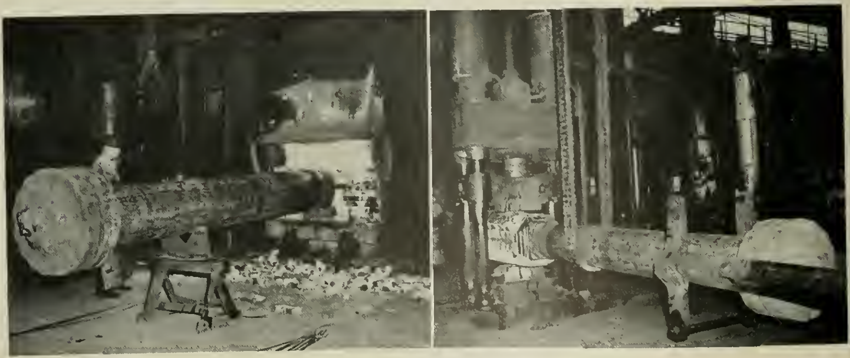
RECENT acquisition of new equipment has modernized and speeded the process of manufacturing marine equipment at Moore Dry Dock Company, Oakland.

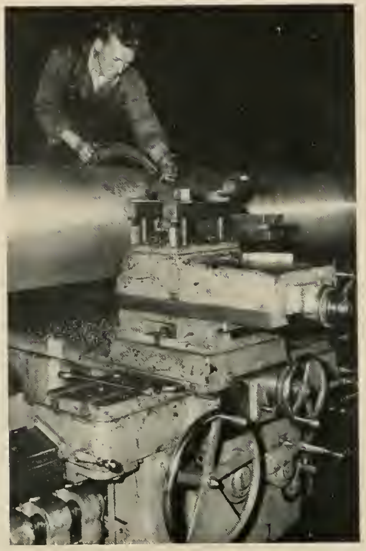
An example of improved machining techniques is found in the manufacture of a tailshaft for a C-2 cargo vessel. This ship is 459 ft. long, with a deadweight of 8,981 tons. Propulsion is through a single shaft transmitting 6,000 hp. The tailshaft for a C-2 is 22 ft. 11¾ in. long.

The ingot from which the shaft is to be made is brought up to forging temperature in a furnace and squeezed into shape in a United Engineering Co. 500-ton steam-operated hydraulic press. A great deal of skill and coordination is required of the forging crew. A foreman, a crane operator, a press operator, and three workmen are needed to handle the huge mass of hot steel under the press jaws. With a forging of this size, only one end is worked at a time. When forging has been completed on one end, the other end is placed in the furnace and brought up to temperature for working.

Upon completion of the forging process, the shaft must be annealed to relieve forging stresses and assure uniform physical properties. Moore Dry Dock's new annealing furnace was designed with projects of this size in mind. The interior of the furnace is 40 ft. long, 5 ft. wide and

Left: In the furnace, raw end of ingot is brought up to forging temperature. Right: 500-ton press shapes hot ingot into cylindrical form.

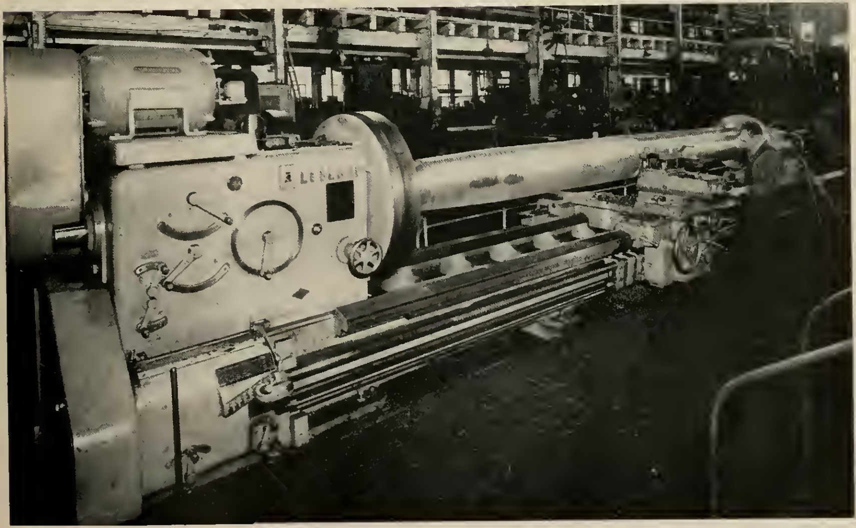




Above: Heavy chips roll off the cutting tool as the rough forging is hogged down prior to finish machining.

Right: Machinist measuring diameter of tailshaft emphasizes the size of the lathe.

Below: New 50-inch heavy duty lathe could handle a shaft twice this long with its 39-foot span between centers.



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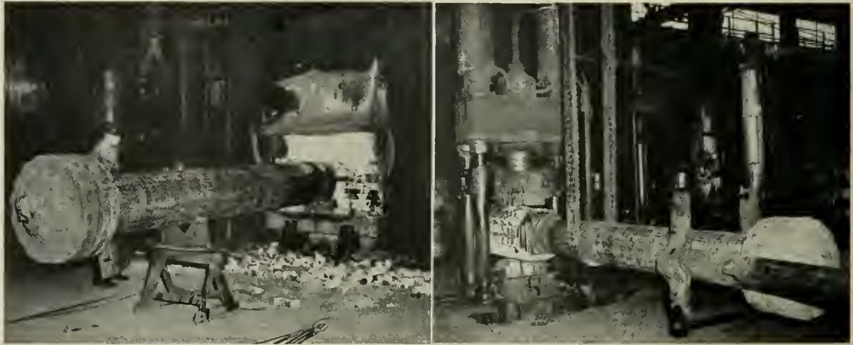

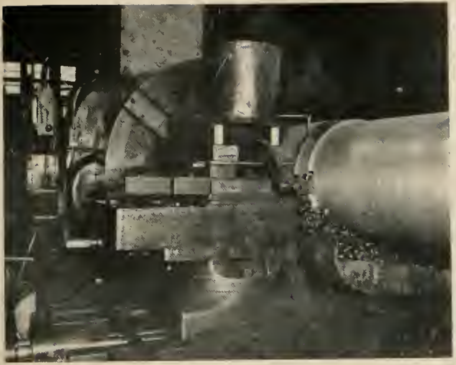

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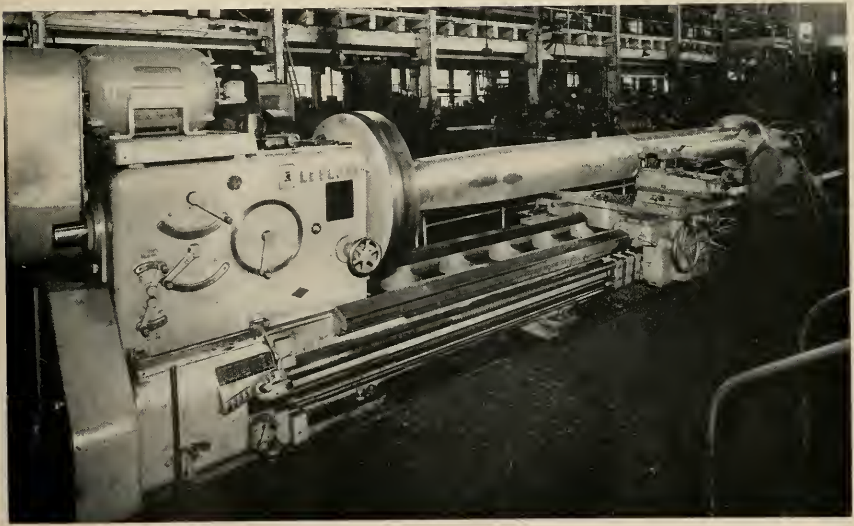


Above: Tailshaft gradually takes shape under skilled handling of forging crew.

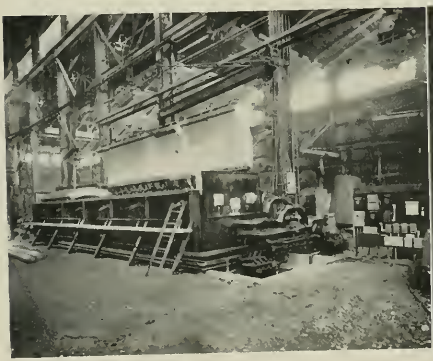
Below, left: New annealing furnace recently installed in forge shop of Moore Dry Dock Company. At right are controls and recording instruments.

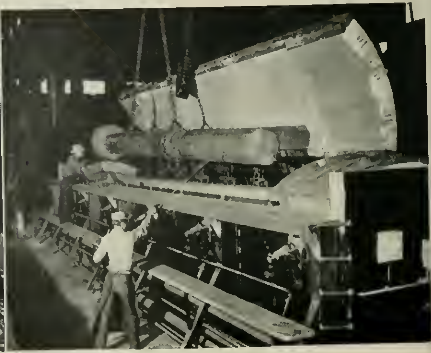
Below, right: Finished forging is carefully lowered into furnace for 12-hour anneal at 1550°, followed by air cooling.

5 ft high, making is possible to accommodate forgings, castings or weldments of unusual size.

The new furnace is equipped with counterbalanced hinged lids over its whole length. Automatic two zone temperature controls and recording charts provide accurate control of annealing temperatures. Maximum attainable temperature of the furnace is 2,000°F. but the C-2 tailshaft under discussion is held at 1,550° for twelve hours, and then allowed to cool in the furnace for about 24 hours. The shaft is supported on 8-inch square bars every six feet of its length during annealing, to prevent warpage.

After rough machining the shaft is finish machined on a new 50-inch LeBlond Heavy Duty lathe, with a maximum capacity of 39 ft. between centers. (This giant lathe weighs 80,000 pounds, and required two freight cars for its transportation.) A new Sturdimatic live center, with a capacity of 40,000 pounds, permits the use of much higher turning speeds than would otherwise be possible. This factor, coupled with the new lathe's 50-hp. motor and great rigidity, has made the use of carbide tipped cutters feasible. On this particular job, Moore used $\frac{1}{2}$x15/16x2 inch KM tips mounted in a 2x2 inch shank. Tips are clamped rather than brazed in place, to simplify regrinding. When the surface grinding is completed, a bronze liner is then shrunk on the shaft and turned to size. The liner in this case was made by Shenango-Penn of Sandusky, Ohio, and furnished by Thomas A. Short Company. Milling the propeller keyway completes the machining. This particular shaft was made for Pacific Far East Line's *Philippine Bear*. Moore is also making a shaft for American President Lines' C-3 liner *President Harrison*. The shaft for a C-3 is 24 ft. 10 in long.





The "Lions Gate"

Newest Addition to the Johnson Line Fleet

FOURTH in the Johnson Line's fleet of five postwar cargo passenger ships, the M.S. *Lions Gate* recently visited Pacific Coast ports, fresh from a clean sweep of all her trial runs in Swedish waters where she averaged a remarkable 21.4 knots. The 9,000-ton, 500-foot motorship has a cruising speed of 19.5 knots fully loaded.

Addition of the *Lions Gate,* one of the most modern ships of its type afloat, will augment Johnson Line's fast, direct service between Europe and the North Pacific range via Panama Canal. The *Lions Gate* was preceded in service by the *Seattle,* the *Golden Gate* and the *Los Angeles.*

Known as the *Seattle* series these ships were planned by the technical department of the Johnson Line and built by Kockums Mekaniska Verkstad.

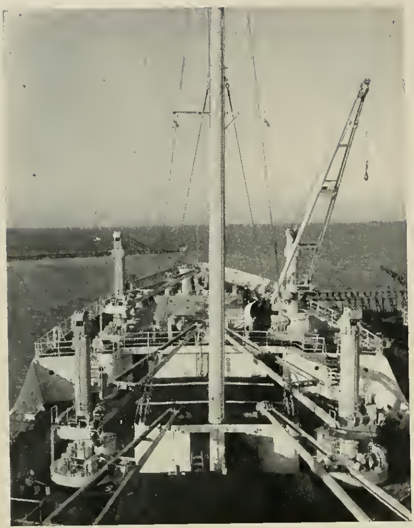
The Johnson Line, under the direction of Consul General Axel Ax:son Johnson, has been operating services to the North Pacific for over thirty years. Regular sailings were started in 1914—the same year as the Panama Canal was opened, whereas the first voyage on this line was made round the Horn before the canal was completed.

In 1912, the same year as that in which the first Diesel-driven sea-going vessel in the world was completed, the Johnson Line took delivery—the second shipping company in the world to do so—of a Diesel-engined cargo liner. In 1922 the Company was the first to possess a fleet consisting entirely of Diesel ships, and at the end of 1947 the Johnson Line had 32 motor vessels aggregating 250,000 tons in traffic, while 8 or 48,000 tons were on order.

The motorship *Lions Gate,* carries the naming pattern established by the Johnson Line for it's M.S.*Seattle* type vessels, using names related to the great ports of the Pacific Coast. She is named for the famed entrance to

Johnson Line's new motorship "Lions Gate," docked at the Port of Oakland's Grove Street Pier.

Picture courtesy of J. Walter Frates, Port of Oakland.



These cranes take the place of the booms and masts popularly associated with cargo handling and they offer a degree of flexibility and speed so essential to a quick turnaround in port.

Vancouver harbor, British Columbia. She is under the command of Captain F. Ranke.

Combined with her speed factor, the *Lions Gate* has advancements in design and construction aimed to provide maximum economy in running costs.

Foremost among these is the improved efficiency in loading and unloading cargo. Instead of the old type derrick boom, the *Lions Gate* and her sisters have 14 specially constructed electric cranes, each with a reach of 41 feet and a capacity of from two to five tons. On some hatches, a combination of two cranes provides a 10-ton lift. The cranes are also adaptable to other jobs such as hoisting engine parts out of the ship or handling lifeboats. The after mast was eliminated in order to provide more space for the operation of these cranes. The foremast has no other function than to support the lantern, aerial, radar, etc.

Instead of the usual five holds, the *Lions Gate* like her sister ships, has seven, permitting a correspondingly larger number of cargo-handling gangs to work at one time and thus materially reduce time in port. Scientific placement of deck fittings and rigging further accelerate loading and discharge, as does the elimination of stanchions, to the greatest possible extent. Hold trimmings are largely vertical and all holds are provided with permanent light fixtures. Shifting beams in the regular holds move on ball bearings in the same plane as the hatch so that cargo can be reached without lifting beams.

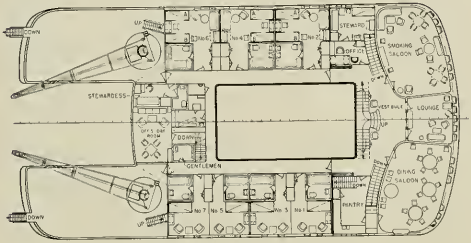
The *Lions Gate* has a cargo capacity of 580,680 cubic feet. Of this amount 91,020 cubic feet is taken up by refrigeration space including 3 and 4 lower holds having a freezer space totaling 28,450 cubic feet capable of maintaining temperatures of minus 20 degrees Centigrade. This assures most favorable transport of perishables including fresh fruits through the tropics. Only a small number of fixed ventilators of the ordinary type are installed. Motor driven fans located in deckhouses on the fore and after decks ventilate all holds, and the holds are provided with devices for extinguishing fire in the cargo. Radar and autopilot are included in the modern aids to navigation provided on the ship.

The vessel is propelled by two double acting Diesel engines with an output of 14,000 horsepower.

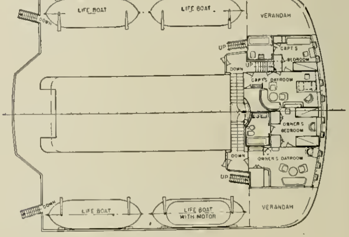
Located amidships, the galley is finished in stainless steel and is equipped with the most up-to-date electric appliances, electric ranges, baking ovens and refrigerators. There is also a laundry with washing and ironing machines and a drying room.

The hull is all-welded, frames are welded to the plating, and beams to the deck. The double bottom is also welded all around and is provided with extra docking keels, which enable the ship to be docked with a couple of thousand tons of cargo on board. Reinforcement for running in ice stretches as far aft as the forward engine room bulkhead.

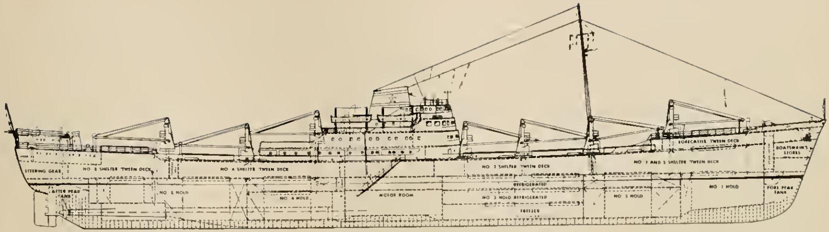
Although designed basically as a cargo ship, it has accommodations for 12 passengers in spacious outside cabins, each with private bath. Besides an owner's double



PROMENADE DECK



BOAT DECK



Longitudinal cross-section of "Lions Gate".

cabin with sitting room, there are four single and three double cabins, as well as a passengers' dining room, smoking salon and lounge. The passenger quarters are beautifully appointed and panelled throughout with Swedish maple, mahogany, American walnut and other fine woods.

On her arrival at the port of Vancouver, a special plaque was presented to the vessel on behalf of the Vancouver Board of Trade by president Colonel William G. Swan.

Long Distance Towing and Tug Design

By EUGENE F. MORAN, Jr.

Vice-President, Moran Towing & Transportation Company

THE use of self-propelled vessels in ocean towing developed in the early part of the 19th Century from the practice of sending canal and river towboats out to the harbor entrances and beyond to hasten the berthing and departure of sailing vessels as they arrived off a particular port. At first, these tows were from or to just outside the port in the open sea, but when the added expense was more than offset by other savings, such as an attractive market price or a substantial reduction in the number of days for the voyage, these tows were for longer and longer distances. It finally developed in the coasting trade that the entire voyage was being made under tow, enabling a drastic reduction in the size of the crew and the expense of sail and rigging. Only a short sail and rigging were retained for emergency should a tow break away in a storm or the towing vessel suffer machinery breakdown. Thus was brought about the extensive tug and barge coastwise trade not only in Europe and the British Isles, but also on both the East and West Coasts of the United States. Practically all of the barges in this trade were formerly sailing ships that had been cut down for barge service.

The economic advantage of using a separate vessel that carried no cargo for hauling one, two or three barges at a time in competition with individual sailing vessels soon became apparent. While such barges were being loaded or discharged, the towing vessel was profitably employed on other work resulting in more efficient use of the transportation capacity. A variation of this practice was tried out by some coastwise transportation operators such as the Reading Railroad, where the towing vessel itself also carried some cargo. One such tug was the steam collier *Charles F. Mayer,* built in 1884 and owned and operated by the Consolidated Coal Company between Baltimore, Md. and the New England coal ports. At that time, she was considered the largest towboat on the Atlantic Coast. She had an iron hull, with a length of 236′, a beam of 37′ and a draft loaded of 18′5″. She carried a cargo of 1,500 tons of coal. Her machinery consisted of one compound engine with high pressure cylinder 30″ in diameter, the low pressure cylinder 56″ in diameter and a 36″ stroke. Her indicated horsepower was 1200. Due to the shallow draft in most of the harbors being entered in this trade, the quantity of such cargo was not large enough to earn sufficient freight to offset the cost of the lay time on such an expensive vessel during loading and discharging. The practice of carrying cargo in the towing vessel proved to be uneconomical. Coastwise transportation by ocean-going tug and barge continues to this day, but the improvements of the channels in the coastal harbors, enabling the use of larger and larger self-propelled vessels in this trade, has greatly reduced the volume of tug and barge operation. In addition to the towing of cargo vessels, ocean tugboats are employed in salvage work and in the rescue of disabled vessels at sea. Various kinds of vessels and floating

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Paper presented before the New York Metropolitan Section of The Society of Naval Architects and Marine Engineers September 21, 1950.

objects such as dredges, construction equipment, drydocks, caissons and numerous others have been towed by ocean-going tugs to practically all ports of the world.

The ocean-going towing vessel at the start of the development of this trade was generally propelled by paddle wheels mounted amidships outside the hull on either side, and ocean towing to this day is performed in some instances by side wheel paddle steamers in England. Toward the middle of the last century, experiments and improvements on the screw propeller were sufficient to have that method of propulsion employed more and more until in modern times it is used exclusively in new construction for ocean towing. In 1882 the relative advantages of screw propellers versus paddle wheels was the subject of continuous and vehement debate among those engaged in the shipping trade. Quoting from a clipping from the New York Evening Telegram dated May 31, 1882—and bearing in mind the times are 70 years ago—"The designing of the best screw propeller wheel, under given conditions, up to this time has baffled all mathematicians and physicists." I believe that even now, almost 70 years later, that statement is reasonably correct. Through the process of trial and error in varying the diameter, pitch, blade area and shape of blade, propellers to fit given conditions have reached a fairly high state of efficiency, and together with the advantages of a more seaworthy and less cumbersome vessel, the screw propeller has been adopted as standard practice. The engines and boilers in the early paddle wheel vessels were of course extremely crude, consisting usually of an iron drum capable of withstanding some internal pressure and a single cylinder engine of tremendous bore and stroke. The history of the development and improvement of boilers and reciprocating steam engines from that stage to the present is well recorded and has no place in this paper. The development of the steam turbine in short installations and large passenger and cargo vessels did not carry on down to vessels of this size to any great extent, and it was not until the advent of the diesel engine that these vessels shared in the tremendous technical development of vessel power plants.

The diesel engine had first appeared in small inland towing vessels prior to the First World War but it was not until after that time that they were developed to the point considered sufficiently dependable for ocean-going tugs. In the 1920's, the diesel engine was constantly being improved and demonstrating its great economies and dependability, and prior to the Second World War by far the greatest part of new ocean tug construction was using this type of power plant. At first these engines were directly connected to propellers as the piston speeds in those days were kept very low, resulting in low RPM because of tremendously cumbersome design and insufficient metallurgical knowledge. Since that time with the acquiring of such knowledge, higher and higher piston speeds became practical and the higher RPM of the diesel engine dictated the use of reduction gears and electric drive to reduce the propeller RPM for maximum efficiency.

Prior to the first world war, ocean towing vessels were developed in Europe and Great Britain especially for salvage and rescue work, with 2,000 and 3,000 H.P. and a length of between 200 and 300 ft. These vessels, when not otherwise engaged, made numerous tows for long distances—several of them between Great Britain and ports in the Indian Ocean. This type of vessel is very much in existence today, but, due to tremendous size and power and high cost of operation, its purely towing service is limited to extremely long distances and vessels of less size, power and expense perform the shorter haul work. In this country, at that time, the size and power of the tugs performing ocean and coastwise towing was little more than that of the larger harbor craft, and many of these tugs engaged in harbor work when ocean towing work was not available. The interesting contrast between the American and European designs of ocean tugs is the location of the towing bitts, or in the European design, the towing hook. In the European design, this permits smaller arc of rudder travel and also a smaller area of rudder blade. It restricts, however, the space allocated to machinery. In the American design, we overcome the disadvantages of the shorter distance between the towing bitts and the rudder by increasing the rudder travel to 100°, increasing the blade area and the use of balanced rudders. This permits much greater freedom in the layout of machinery and living quarters on such vessels of short length. During the First World War, the Shipping Board caused to be designed and built an ocean-going steel hull type tug 150′ long with 1,000 IHP. They had installed 17″ triple expansion engines and Scotch boilers, most of which burned coal, but a few of which were equipped for fuel oil. Forty-eight of these tugs were built with the idea of using them in the coal trade from the Chesapeake Bay area to New York and New England. Most of them, however, were assigned to rescue service, and their performance at that time was considered satisfactory.

Little new construction of ocean-going tugs was made after the first world war until the U. S. Navy designed and built the ATF type in 1938. Three of this type were built. They were 205′ over all, with 3,000 H.P., diesel electric drive, and performed very creditably with few deficiencies. It was felt that with such high horsepower there should have been a greater designed draft and the full towline pull that should have been available was not produced. These vessels were, of course, designed solely for ocean towing.

Shortly after that, my company designed a new type of tug flexible enough to be used for ocean towing, harbor work and also on the New York State Barge Canal and the Great Lakes. Two of this type were built. This tug known as the *Elizabeth W. Moran* type, had the low canal type pilot house and forward trimming tanks so that she could operate on a draft of approximately 10′. Her hull characteristics were such that she could be trimmed to over 12′ when towing at sea, and numerous long distance tows were performed by this design of tug. Eventually, the *Elizabeth W. Moran* was sold to the Suez Canal Company and was delivered by us under her own power to Port Said, Egypt.

This first design used direct connected diesel engines, and while its performance was satisfactory it was felt

(Continued on page 66)

Esso Tug No. 9

Standard Oil's First Diesel Tug in New York Harbor

ONE of the largest privately-owned merchant fleets in the world serves petroleum exclusively, and sails under the Esso house flags of the various Standard Oil Company (N.J.) affiliates. The major part of the fleet consists of ocean-going tankers up to 26,000 tons dead-weight each. There are also a ,host of smaller craft, including LST's in offshore drilling, and tugs used for barge hauling and for docking their big sisters. In the New York harbor area, the Inland Waterways Division of the Esso Standard Oil Company has eight tugs docking and undocking ocean-going oil carriers, and towing barges.

But it was only in recent weeks that Standard Oil acquired its first Diesel-Electric tug for domestic operation, *Esso Tug No. 9*. Built by the Gulfport Shipbuilding and Dry Dock Company, she is the latest of a long series of General Motors Standardized tugs of about her size and power, from which "bugs" often associated with new design have been eliminated as the result of hundreds of thousands of miles of heavy-duty service in many parts of two hemispheres, to which these little vessels have gone under their own power.

Esso Tug No. 9 is owned by the Esso Standard Oil Company (Inland Waterways Division), operating and marketing affiliate of the Standard Oil Company (N. J.). Her maiden trip from Port Arthur to Hudson River — a distance of 1829 nautical miles, buoy to buoy—was made in six days and eight minutes, or an average speed of 12.69 knots. The weather was moderate, but occasional squalls were encountered.

The main engine of the vessel is a General Motors Model 12-278A Diesel, which develops 1200 b.hp. at 750 r.p.m. It drives an 814-kw., 560-volt, 1454-amp., d.c. generator that furnishes current to the electric propelling motor turning at 875 r.p.m., but geared down to the propeller shaft, the latter turning at 200 r.p.m., at full speed, and delivering approximately 1050 s.hp. to the propeller. There are 12 V-arranged power cylinders, each 8.75″ in diameter by 10.5″ stroke, operating on the two-cycle principle.

Esso Tug No. 9 is completely packed with power, for her main engine and generator together are less than 25 feet long by 6 feet wide. This small overall size for 1200 b.hp. allows ample room in the machinery compartment for the auxiliary equipment, fuel and lube oil tanks, and for the engine room crew to move around freely.

The vessel has an overall length of 102 feet. Her mean breadth is 25 feet, and her molded depth 12 feet, 4 inches; while the molded draft is

"Esso Tug No. 9," first Diesel-Electric tug in the Esso Standard Oil Company fleet.

George W. Codrington, Vice President of General Motors and general manager of Cleveland Diesel, and President Stanley C. Hope of Esso Standard Oil Company, inspect ESSO TUG NO. 9's GM Diesel.

10 feet, 1 inch. She is registered at 192 gross tons and 82 net tons. She was designed by Tams, Inc., New York City, in cooperation with the builder's engineering department.

A crew of ten is carried. They work 12 hours (six on and six off) for 20 days, then go ashore for 10 days, a substitute crew taking over during that period. The permanent crew consists of captain, mate, chief engineer, assistant engineer, cook, four deck hands and a day man.

The skipper's quarters are located in the after part of the pilot house. On the main deck, the mate's quarters on the port side has two berths, and the cook's cabin to starboard has one berth. Alongside the cook's cabin is the companion way to the crew's quarters below, where there are six berths, or more than sufficient for the present crew. Next on the main deck comes the galley, then a toilet and shower, and the engine room opening with its entrances to the two engineers' cabins, one of which has two berths.

The entire tug is equipped in a modern way, and includes radar, direction finder, and radio-telephone system.

Radar and Loran At Maritime Training Station

THE value of Radar lies in its proper handling by ship's officers. Licensed Deck Officers of the U. S. Merchant Marine are invited and encouraged to avail themselves of free training courses in Radar and Loran, being offered by the United States Maritime Service at its Radar and Loran School. Located at the U. S. Maritime Service Training Station in Alameda, California, and easily accessible via Bay Area transportation, the School provides excellent facilities for learning. These include carefully planned courses, modern equipment and experienced instructors. A certificate is earned by the student who satisfactorily completes training.

Latest model Radar units and twenty-one Loran sets of leading manufacturers are now in operation and available for students' use. These Radars present a sharply defined picture of the San Francisco Bay Area, high-lighting islands, ships, small craft, buoys, bridges and mountains within range.

Radar and Loran classes are presented separately and alternately. The Radar course comprises five days. The Loran curriculum is presented during an eight day period. These courses are designed to cover thoroughly the theory and principles of the two navigational systems and their practical application to present-day shipping.

The Radar course includes a detailed exposition of the theory of radar detection, interpretation of scope patterns, function of each part of the Radar, capabilities and limitations of Radar, avoidance of collisions through the use of Radar, and the Rules of the Road, operation of equipment, kinds of reflecting surfaces, Radar reflector buoys, rain squall echoes, ten centimeter and three centimeter considerations, bearing and range discrimination, sea return, false echoes, Radar beacons, harbor entrance supervision through Radar, and use of the Echo Box.

The course in Loran comprises a study of the pulsed Long Range Navigational method, the principle underlying the Loran line of position, time-difference measurement, the operation of all models of marine Loran equipment, use of the Loran Tables (H. O. 221) and Charts, ground wave and sky wave techniques, accuracy and range considerations and current Loran coverage of world areas.

While students are enrolled in the Radar and Loran

(Continued on page 76)

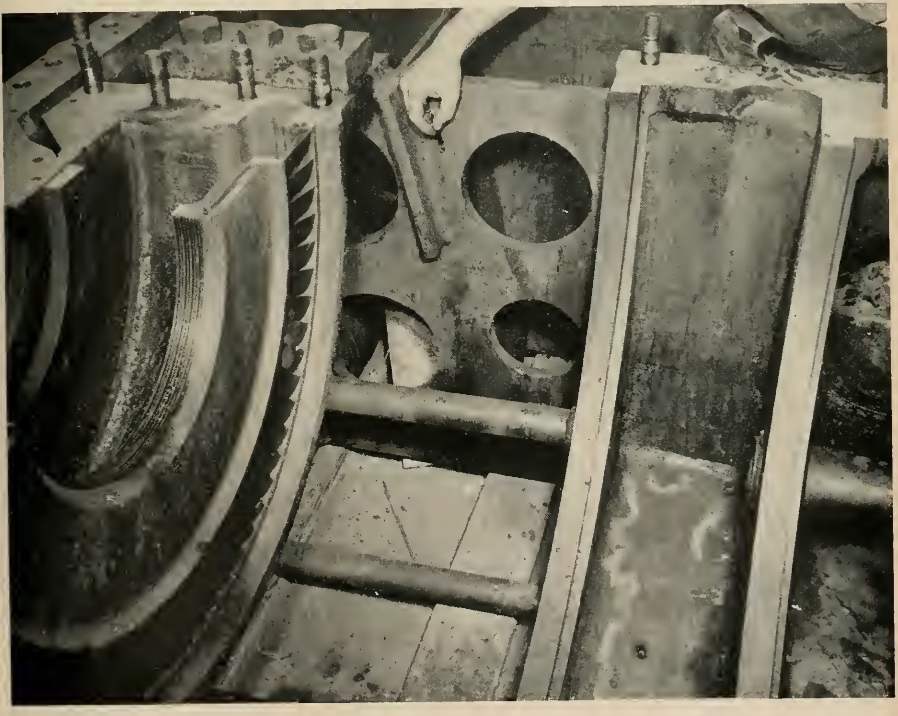
Submerged Turbine Restored

Quick Job at Westinghouse Emeryville Plant

ONE of the most spectacular salvage jobs ever handled at the Emeryville, Calif., shop of Westinghouse Electric Corporation was completed recently when a turbine propulsion unit from a sunken AP 2 type ship of 10,681 deadweight tons was repaired for use in a new Great Lakes vessel being built in Canada. The 6,000 shaft horsepower turbine unit, which had been submerged in salt water for about three weeks, was built originally by Westinghouse during World War II.

Although no major engineering problems were encountered on this job, it did require a considerable amount of exacting work, including removing rust and scale from the rotors, cylinders and associated apparatus, as well as cleaning, checking the truth of shafts, dynamic balancing, dressing up journals, and rebabbitting and machining of bearings. The restoration of the propulsion unit to first-class condition was regarded as indicative of the soundness of modern turbine design, workmanship and materials. Despite the rather appalling appearance of this complex and highly precise apparatus on arrival at

The effect of salt water on the turbine is clearly visible in this close-up of a cylinder base section, taken immediately after arrival at the Westinghouse Emeryville shop. Scale, rust and corrosion were subsequently removed by sandblasting. During sandblasting, the flanges were covered. They were subsequently restored by hand polishing as shown in picture on next page.



the Emeryville shop, all major parts were found to be in basically good condition, once the corrosive effects of the salt water had been removed.

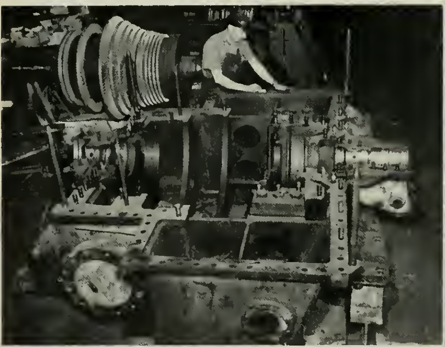
The low-pressure turbine contains 11 paired rows of stainless steel blades in its rotor and cylinder, compared with 19 for the high-pressure turbine. Each is rated at 3,000 shaft horsepower. The low-pressure spindle turns at a normal speed of 3,907 revolutions per minute, the high-pressure spindle at 5,410 RPM. Rated steam pressure is 440 pounds per square inch gauge under a total temperature of 740 degrees Fahrenheit exhausting into a $28\frac{1}{2}$-inch vacuum. The turbine unit is designed to oper-

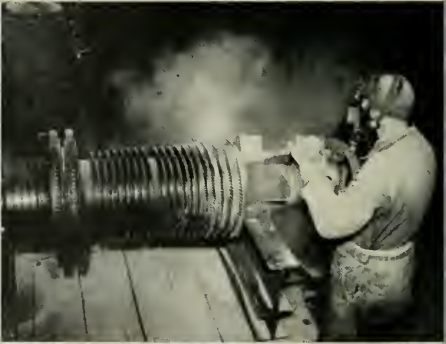
Top left: The condition of this low-pressure cylinder housing (in foreground) is typical of the entire AP 2 turbine unit which was sent for repair to the Emeryville, Calif., shop of Westinghouse Electric Corporation. Although rust, scales and corrosion, resulting from the extended submersion in salt water, gave the apparatus a bad appearance, it was found that this machinery was essentially in sound condition and could be put back into first-class shape. In this picture Harry Askew, machinist, is using a stone to re-surface a flange. In the background is the low-pressure spindle, which has just been sand-blasted.

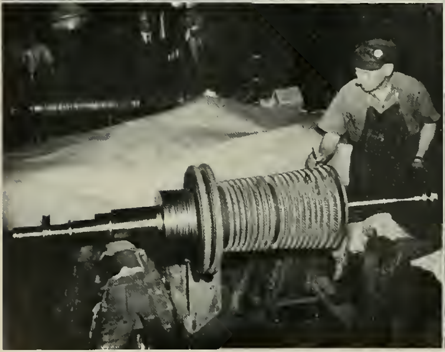
Top right: How to get rust off a rotor: In most cases, sand-blasting was sufficient to completely clean the metal. In this picture, a high-pressure spindle is shown in a cloud of sand dust being shot at 80 pounds pressure by a workman, George Potts.

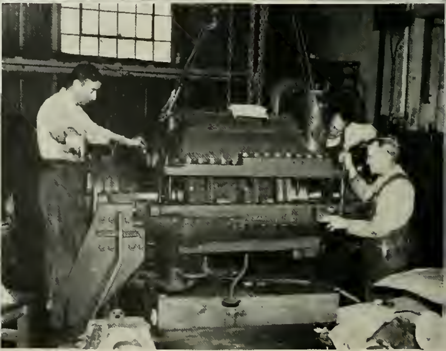
Bottom left: The completely-repaired high-pressure turbine spindle, in foreground, shows little trace of its long submersion in salt water. The 19 rows of blades, after sand-blasting, were thoroughly cleaned. The spindle itself was checked for truth, machined and ground on the journals, and re-balanced dynamically so that it can spin smoothly again at its rated 5410 RPM. The larger turbine spindle in the background of this picture is not a part of the marine unit. It is from a 6000 kilowatt central station turbo-generator set, which had also been sent to the Westinghouse Emeryville shop for repairs.

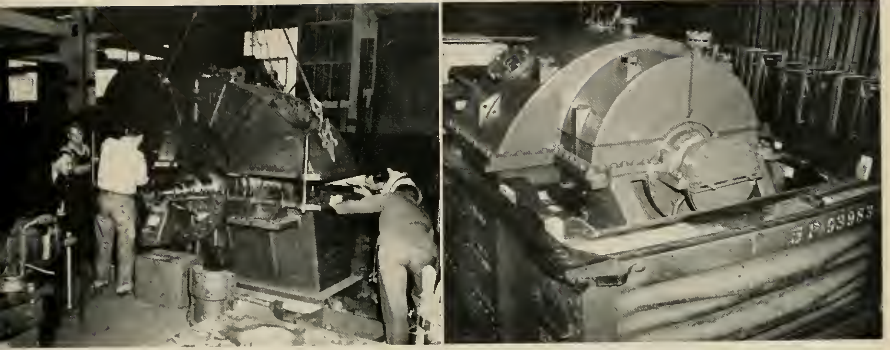
Bottom right: Final step in repairing the high-pressure turbine: As this picture indicates, the entire turbine has been thoroughly checked, machined as necessary, and painted. This picture shows three Westinghouse workmen carefully lowering the upper half of the cylinder into place over the spindle.











Left: Easy does it! Like the high-pressure part of the turbine, the low-pressure unit has been sandblasted, repainted and completely checked throughout, to put it back into serviceable condition after its immersion in the ocean. Right: Looking "as good as new," the re-assembled low-pressure cylinder is shown here in a railway car, securely shored up for the long trip from Emeryville to the Port Weller Dry Dock, in St. Catherine, Ontario, Canada. The restoration of the entire AP 2 turbine unit, which had been under salt water for about three weeks, took less than three months. The apparatus is to go into a Great Lakes vessel being built for Colonial Steamships Limited, of Port Colborne, Ontario.

ate through a train of gears, to turn the ship's propeller at 100 RPM.

Restoration of the turbine unit was done entirely at the Emeryville shop and took less than three months. The Westinghouse engineer in charge of the repairs was C. H. Sandal. Victor Parker represented Colonial Steamships Limited, of Port Colborne, Ontario, future operators of the new ship. The vessel is currently being built by the Port Weller Dry Dock, in St. Catherine, Ont.

The accompanying pictures show some highlights of the work done on the turbine cylinders and rotors. Other elements of the turbine unit involved in the repair job included the boiler feed pump turbine, two forced draft blowers and the maneuvering valve.

Port Authorities Meet at Tahoe

Claire V. Goodwin, president of the Oakland Board of Port Commissioners, was elected a director of the Pacific Coast Association of Port Authorities which concluded its thirty-seventh annual convention at Lake Tahoe September 8.

Captain Homer T. Shaver of Portland, Oregon, was elected president; John F. L. Bate of San Diego, first vice-president; F. W. G. Sergant of Vancouver, B. C., second vice-president; Captain D. J. McGarrity, Portland, Oregon, secretary-treasurer.

The Association accepted the invitation of Shaver and McGarrity to hold the 1951 convention in Portland.

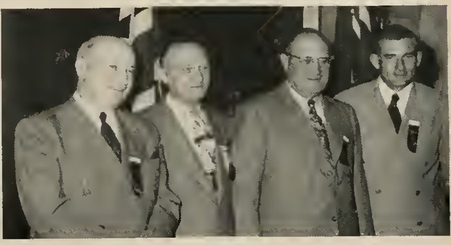
A. H. Abel, Port Manager and Chief Engineer of the

(Continued on page 49)

New President of California Association of Port Authorities greeted by two past presidents. M. W. Daubney, Long Beach (left), new president, is congratulated by General Robert Wylie of San Francisco (center), retiring president, an Claire V. Goodwin, Port of Oakland, immediate past president.

New officers of the Pacific Coast Association of Port Authorities. Left to right: Captain D. J. McGarrity, Portland, secretary; F. W. G. Sergant of Vancouver, B. C., second vice president; Captain Homer Shaver of Portland, president; and John F. L. Bate of San Diego, first vice president.

Pictures courtesy of J. Walter Frates, Port of Oakland



Bethlehem Launches "Constitution"

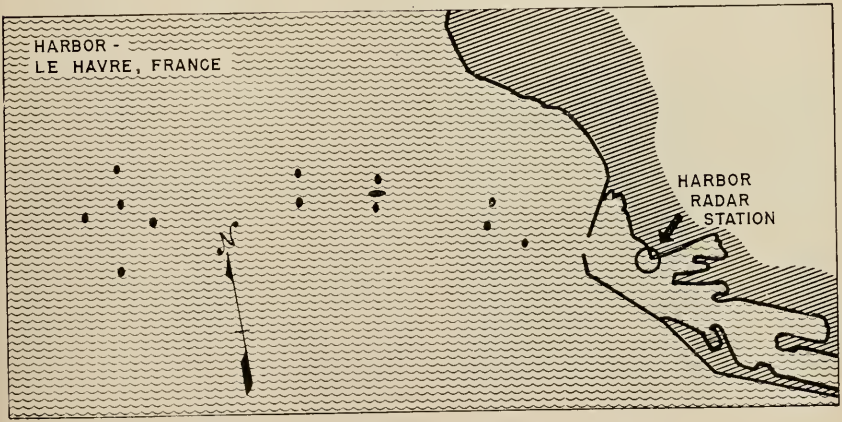
THE S.S. *Constitution,* the new 26,000-ton liner built for the American Export lines, sliding down the ways of the Quincy Yard of the Bethlehem Steel Company, as she was launched September 16. The new liner will soon be carrying 1,000 passengers to France and Italy. She is a sister ship to the *Independence* which had previously been launched and is now being outfitted.

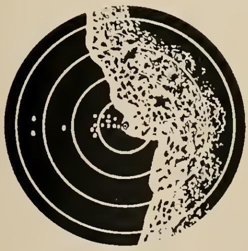
Of the six big passenger ships under construction at Eastern yards, these two are the only ones being finished for private operation. The Presidents *Adams, Jackson* and *Hayes* and the giant liner *United States* have been taken over to be completed for troop service for the Navy.

Another Great Port Adopts Radar

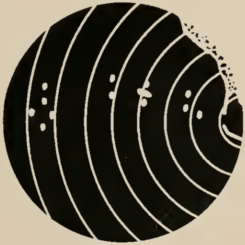
—Cities Increase Harbor Protection as Ship Lines Demand Shortened Port Delays.

AN especially designed Harbor Radar System which will greatly reduce shipping delays in fogbound harbors was recently announced by the Raytheon Manufacturing Company of Waltham, Massachusetts. This system is the culmination of seven years' radar research in conjunction with the U. S. Navy, the U. S. Coast Guard, and the equivalent agencies of several other countries. The first of these "super-radars" is now being produced for installation at LeHavre, France, under a contract with the French Government. This system will replace an

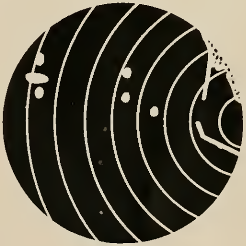




20 MILE RANGE



4 MILE RANGE



2 MILE RANGE

experimental installation using shipboard type equipment which has been in service for about three years, during which extensive operating tests have been conducted.

The Raytheon Harbor Radar System follows the conventional shipboard designed antenna and indicators or scopes engineered for each particular harbor. The overall results are images almost five times sharper and clearer than most shipboard radars. There should be as many indicators in one Radar Center as necessary to present all portions of the harbor in sufficient detail.

These Harbor Radar Systems are operated in close co-ordination with Harbor Pilots as an improved harbor facility for operating ships on schedule. This is similar to the Ground Control Approach system used in landing aircraft during fog or low visibility. The master of the ship and the pilot of the aircraft are "talked in" but at all times retain their own responsibilities for their ship and may "pull out" at any time. The pilot at the Radar Center keeps the pilot on board ship continuously advised by radiotelephone.

The illustration shows the essential features of the system. At the top is a chart of the Harbor of Le Havre showing the channel, the breakwater and the location of the Radar center. Directly below the chart are pictures of typical indicator presentations showing the way in which the various scopes are adjusted for general surveillance and highly detailed, small area observations.

New Radar Installation at Point Bonita

Left: Chief Electronics Technician Robert Moring, USCG, is shown testing the new surface search radar set to be operated by the Coast Guard at Point Bonita Light Station.

Below: Looking westward from San Francisco, one sees the new surface search radar installation at Point Bonita. Built at a cost of approximately $22,000, the installation will be used primarily to supplement a visual lookout watch during weather conditions of low visibility.

Official U. S. Coast Guard Photos

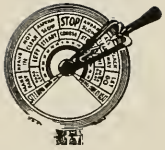
ON the westernmost tip of Point Bonita, located atop the lighthouse operated by the United States Coast Guard, Mariners entering and leaving San Francisco Harbor will now see a new surface search radar installation.

Primarily, the radar, a Raytheon Pathfinder, will be used to supplement a visual lookout watch during low visibility weather conditions.

The radar tower and scanner, which are visible to ships in the main channel, was built by the Moore Dry Dock Company. The radar house, which sits on top of the entrance to the lighthouse, was constructed by the Fred J. Early Jr., Company, Incorporated, while the tadar set itself was installed by Republic Electric of San Francisco, all at a cost of approximately $22,000.

Steady as you go!

KNOWLEDGE IS THE STRAIGHT COURSE TO ADVANCEMENT



A Department for Deck Officers

by "The Skipper"

Questions Welcomed. Just Address "The Skipper," Pacific Marine Review, 580 Market St., San Francisco, California

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What Would You Do?

[Practical Application of the Rules of the Road]

THE stimuli for this series of articles has been the numerous maritime accidents of recent months which this writer feels sure could and would have been avoided by a closer observance of the Rules of the Road. I am not of the opinion that most of the officers, who are in charge of a watch on the bridge of a ship, do not know the Rules of the Road. These officers have given satisfactory evidence to the U. S. Coast Guard Inspectors by passing very rigid examinations that they do know the Rules of the Road. If they know the Rules of the Road, why are there collisions as a result of their not being obeyed? Are these officers so irresponsible as to not care whether or not they obey the rules? What a foolish question! The licenses that these officers must have in order to sail in such a capacity represent years of training, months and months of study, hours and hours of writing in answering examination questions prior to the issuance of such a license. Can you imagine anyone who would be so foolish as to be irresponsible enough as to voluntarily place themselves in a position to have this license taken from them through their own carelessness or negligence? I cannot! There must then be other reasons which cause these violations of the Rules of the Road. It is the opinion of some, who might be considered authorities on such things, that the greatest cause for these violations is the difficulty which all of us have, to a certain extent, in analyzing a situation and applying all of the rules which pertain to such a situation quickly. When in danger of collision the officer in charge of the navigation of the vessel must think clearly and quickly. The purpose of this series of articles is to aid such a person in doing just that.

It is intended that imaginary situations which might occur be set up and analyzed, and action as required by the Rules of the Road be described. Thus having determined ahead of time what action should be taken in a given situation, we will be ready for it by having already thought out the answer.

As the first of such situations let us take quite a common one. Assume you are the mate on watch of a vessel in international waters and you see a fog bank ahead on your course. *What would you Do?* Now let us see what articles of the Rules of the Road apply and what they say we should do. As I see it Articles 15, 16, and 29 apply to such a situation. The first action to be taken in such a case would be to notify the Master; then almost simultaneously signal "Stand-By-Engines" to engine room and direct them to reduce the speed of the vessel to a moderate speed, check your lookout, see that there is one on the focs'le head and if you feel conditions warrant it, dispatch one to the crows nest also. Start the fog signals as prescribed by article 15. Now make sure you have correctly noted the times for each of the above activities for entry of each in the log book.

If your vessel is equipped with radar of course you should set the radar equipment in operation. Although radar is not required equipment, *yet,* there are records of collisions where radar equipped vessels were held at fault for not having used their radar equipment as another means of avoiding the collision. The radar in no way modifies the Rules of the Road, nor does its being in operation allow or permit a violation of the rule concerning a moderate speed in fog. There is, though, no question of the fact that radar can and will assist in the prevention of collisions in fog if it is used properly and prudently.

The United States Government feels that the importance of the use of radar aboard merchant vessels justifies

(Continued on page 72)

S. F. Propell

Bridge Deck, left: Les Mathis, Doran Propeller Company, winner of Pacific Marine Review trophy. Master of Ceremonies Frank Dwinnel presents it.

Right: Norman Dunnavant, Gene Hoffman and Admiral Giles Stedman.

Port side, amidships: President K. C. Tripp greets big winner (Les Mathis).

On the Matson-MorMac flat: Matson Vice President E. J. Bradley greeted by Tripp.

Lower hold: Penn De Rochie of Pacific Marine Review gives a calculating once-over to his horseshoe prize. What he can do with that!!

While in the next picture President Tripp gets in first licks in his inspiring introduction of Gene Hoffman. From the angelic look on Gene's face, he is very definitely skeptical of what K. C. is saying about him and is calculating the effect of his counter-attack on the Big Marine.

Tourney

Top Deck again: Hughes Ogilvie with a very fine mixer (the adjectives are ours).

Lloyd Fleming being his usual quiet conservative self.

David Norman Lillevand with the brass hat, a hat which others have worn with considerably less dignity.

Starboard side going down:

Sam Harrison, Port Engineer of Associated Oil and Bud Pessel of Matson, secretary of the club. Bud will testify that Sam was there that day.

Johnny Johnson, Ray Luce and Ray Wheeler. Proving that the game was honest, Johnny, who was responsible for all the prizes, could win no better than a dozen eggs.

Among those in the next picture are Louis Ets-Hokin, Hughes Ogilvie, Jack Paton and Bill Schwartz. Jack Paton is Chief Engineer on the "President Wilson".

Here (bottom right) are Ed Senter, John Huster, Charles Hook, Les White, waiter, Bob Lillevand, John Thomas and Bill Warren. John Thomas is a cop.

The puckish gentleman in the celestial garb is Joe Knowles (inset).

And finally (below), maintaining the Pacific Far East Line's operating dignity is L. M. Mauk.

More Pictures of Golf Tourney

Near the finals of golf and horseshoe matches. Most of those in the above pictures are helpers. Henrik Greger and Allen Scurfield are being helpful in the first picture while Louis Ets-Hokin gets his best encouragement from Bud Pessel; Oscar Beyfuss watches the birdie, Ross Marble hopes he'll miss, and Tom Ingersol, satisfied with his score, doesn't care. The ghost of last year's winner is in the tree.

Left, It's all over for Tom Hansford, Jack Marlborough, John Clerico and Les Mathis, but Les gets back into the act later in the evening.

Burtoning Stresses And Some Possibilities of Reducing Them

By RALPH W. NETTERSTROM
Safety Supervisor, Accident Prevention Bureau
Pacific Maritime Association

In an able and exhaustive discourse before The Northern California Section of The Society of Naval Architects and Marine Engineers in September, the problem of burtoning stresses on cargo handling gear was explained and illustrated in great detail. Only a brief summary can be published here, but copies of the illustrated paper are available.

SHIPS' cargo handling gear is designed in accordance with the stresses induced by a load supported on a swinging boom. The stresses developed in burtoning cargo, the system under which the gear is actually used, far exceed the designed loads.

The maximum stresses developed in burtoning are limited, not by the weight of the load but by the line pull which the winch can develop.

The following suggestions are offered for improving the safety and efficiency of the present gear with a minimum of modification:

1. Include in a permanent label on each boom the minimum length of mast from heel to topping lift block for which it was designed as well as its safe working capacity as a swinging boom.

2. Provide all-wire guys of sufficient strength to eliminate the use of preventers.

3. Make guys fast to vang posts coaxial with heels of booms and with provision for letting the yard guy swing clear of the vang post from a padeye on deck when yard is broad off the beam.

4. Lead the hauling part of the outboard guy to the ship's side to avoid increasing the thrust on the already overloaded boom by leading the hauling part down it.

5. Provide an indicator on the boom to show the hori-

(Continued on page 73)

Varying Safety Requirements For Tuna Clippers

(Continued from September)

By DAVID W. DICKIE

IN THE January and February 1948 issues of the *Pacific Marine Review* an article was published outlining the Tuna Clipper Safety Requirements and the reasons for each requirement. The difference between the Rules of the American Bureau of Shipping, the Rules laid down in the Load Line Regulations, and the Safety Requirements of the Tuna Clipper as outlined in the Bulletin dated August 1, 1946, and the latest features that have been added from experience, were given in the September issue and are continued here.

In this discussion of rules, the numbers refer to the latest arrangement of the Safety Requirement rules.

No. 9. Door in the Side of the House.

Where a vessel has a continuous flush deck fore and aft, the door in the side of the house leading to the Engine Hatch is to have a sill at least 12" high.

According to the Load Line Regulations this is an exposed position on the freeboard deck and the sill of the doorway should be 24" high or the same as the height of a hatch. However, the houses are usually wood with wood doors and a compromise was made in this instance. It must be admitted that the door sill is only 50% of the Load Line Regulations.

No. 10. Wing Athwartship Doors

The wing athwartship doors to the Engine Room on the Main Deck to be watertight on both wood and steel boats. The sill of the door to be 18" above the deck.

This is a companionway in an exposed position on the freeboard deck, according to the Load Line Regulations, and the sill of the doorway should be 24" high the same as the alleyway hatches. There has been much complaint about these doors, and the fishermen can put up a great howl when a loss takes place, that can be attributed to these doors. It is a fine job and nothing can ever happen to it before it is insured, but the things he pretends not to know when the water gets through and goes below and drowns the motors! However, the door heights are only 75% of the requirements of the Load Line Regulations, and after considering all angles of the situation the underwriters decided to take the risk.

No. 11. Engine Room Bulkhead

Bulkhead at the after end of Engine Room to be watertight in all vessels with the piping made tight at the bulkhead and a stuffing box or suitable collar fitted at the shaft. If a door is fitted to the bulkhead at the after end of the engine room leading to the shaft alley in wood and steel boats, it must be watertight.

This rule meets the requirements of the Load Line Regulations but we have had considerable trouble in having the boats meet the rule. Where the shaft goes through the bulkhead it has been the practice for the builders to cut a hole large enough to pass the coupling and then just leave the hole open instead of putting a stuffing box or collar on the shaft. The best we can hope for is to make the bulkhead pump tight in the wood boats. In the steel vessels there is less trouble in making the bulkhead tight.

No. 12. Engine Hatch Grating

A low coaming 6" high to be built around the Engine Hatch Grating and the Companionway opening to the Engine Room ladder within the Forecastle.

The Load Line Regulations state that the Machinery Space openings are to be properly framed and efficiently inclosed by steel casings. Doors in such casings are to be strongly constructed, permanently attached and capable of being securely closed. The sills of the openings are to be at least 9" above the deck. This is a minimum requirement. Only one boat has a coaming 11" high and most of the remainder have a coaming 6" high. Some of the boats are still running with a coaming 2" high but the latter are gradually being raised. The objection to any coaming at all seems to come up on every boat that is built. The underwriters have accepted 6" as the height of a coaming around the hatch and companionway but the fact remains that it is nothing to be compared with the requirements of the Load Line regulations.

No. 13. Binboards

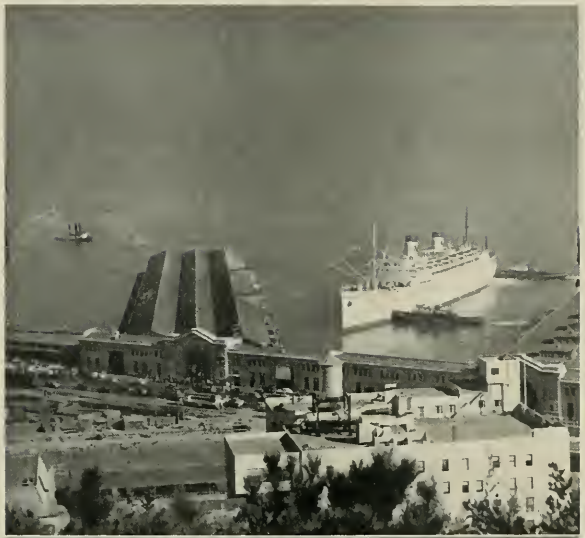
Binboards to be fitted athwartships and fore and aft on deck so fish can be stowed and prevented from sliding.

The Load Line regulations and the American Bureau of Shipping are silent on the subject of binboards. One boat took a list sufficient to submerge the bottom of the wing athwartship door on the low side. The water went below and put all the motors out of commission.

No. 14. Bilge Pumps

At least two pumps to be

(Please turn to page 58)



Matson Takes Big Passenger Pier At S. F.

THE trend toward providing the best in pier facilities for both passenger and cargo vessels is continued this month by the Matson Navigation Company taking over and redecorating the big pier 35 on the San Francisco Embarcadero. It will be used mainly for the crack liner *Lurline.* Pier 35 is a deep water pier and was used during the war by the big Atlantic vessels.

Matson's old piers are being rebuilt by the Harbor Board into a quay type facility with depressed area suitable for truck and rail approach with quicker turnaround and less transference of cargo during the loading and unloading operations.

Top: The "Lurline" as she is being moved into Pier 35 with the help of two tugs. This picture was taken from Telegraph Hill. Notice the fire boat at the left.

Bottom: Matson officials welcoming Paul Bissinger and Admiral J. E. Stika, Comandant, Twelfth Coast Guard District, to the new terminal. This is in the waiting room. Left to right in the group are C. A. McGee, Matson executive department; A. B. Tichenor, Matson vice president; Harding Jensen, manager, Matson terminals (shaking hands with Bissinger); John Cushing, member of the Matson Board and President of Oceanic Steamship Company; Bissinger; and Admiral Stika.

New officers of the California Association of Port Authorities. Left to right: A. K. Maddy, Long Beach, Secretary; Fred D. Parr, San Francisco, treasurer; M. W. Daubney, Long Beach, president, and Elmo Ferrari, Stockton, vice president.

Picture courtesy of J. Walter Frates

Port Authorities

(Continued from page 39)

Port of Oakland, who is president of the American Association of Port Authorities, invited the delegates to attend the convention of the American Association which was held in Oakland and San Francisco, October 3-7.

M. W. Daubney of Long Beach was elected president of the California Association of Port Authorities at its annual meeting preceding the Pacific Coast convention. Other officers of the California Association are Elmo Ferrari of Stockton, vice-president; A. K. Maddy, Long Beach, secretary, and Fred Parr, Richmond, secretary-treasurer.

Congressman Celler Visits S. F. Foreign Trade Zone

Congressman Emanuel Celler of New York, who sponsored the original legislation in 1934 establishing foreign trade zones in the United States, paid his first visit on October 11 to the San Francisco Zone since its establishment in June 1948.

Among the products which he saw in the Zone (now filled to capacity at Pier 45B) were eighty British sport cars, just unloaded from Manchester on the S. S. *Pacific Importer,* bleeding heart doves (imported for bird fanciers), canned Mexican pineapple, Swedish dinnerware, pre-fabricated houses, pile rugs and rattan furniture.

He was impressed with the Zone's progress and remarked that with the present facilities filled, and approval granted by the Foreign Trade Zone Board in Washington, D. C., to expand the Zone to include all of Pier 45 (more than doubling capacity), there is no doubt that a great opportunity exists to further expand operations and trade through the Zone.

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Alberto Martinez, Jr.

Inspecting European glassware in the Foreign Trade Zone, left to right: James Campbell, superintendent, Foreign Trade Zone; Robert Wylie, San Francisco Port manager; Congressman Emanuel Celler; and Paul Bissinger, Chamber of Commerce president.

With the Port Engineers

At the October meeting of the San Francisco Port Engineers, a double-barrelled program brought demonstration of two of the Crane Packing Company's products, the Tube Rolling Control and the Lapmaster. In talks and in pictures C. W. Nelson and Joe Ures of the Crane Company's San Francisco office, and R. G. Roshong of the Los Angeles office, kept the members on the edges of their chairs for 90 minutes. President Ira Chapman and Chairman Marshall Garlinger produced one of the outstanding meetings of the year.

The Tube Rolling Control

This new, electrically operated Control is low in initial cost, and because of the elimination of electronic tubes and large numbers of working parts, it practically does away with maintenance. It can be used for rolling of both ferrous and non-ferrous tubing.

Marketed under the trade name, "John Crane Control", the unit is a precision instrument designed for heavy duty service. It has only two electrical working parts, shock-proof mounted and enclosed in a rugged aluminum cabinet. The electrical parts form a separate, easily-removed unit which can be readily replaced when necessary without special electrical skills. The entire Control unit is light in weight, and is easily moved on the job. Absence of a voltage regulator adds to the mobility.

Operation is extremely simple. Dial settings on the control panel are calibrated over a wide range of sizes and gauges, in both ferrous and non-ferrous tubing. The expanding gun is plugged into the Control unit, and the dial setting for the desired size and gauge is made. Slight pressure on the handle of the gun engages the Control in the circuit. As soon as the tube is rolled to exactly the proper degree, the Control cuts off the motor. Removal of expander is also simplified; the expanding gun motor automatically reverses when pressure on the handle is released and the expander can be very easily withdrawn from the rolled tube end.

In tubes rolled by this new controlled method, over expanding of tube ends is eliminated, with consequent reduction of cold worked stresses, tube-end thinning and early tube failures. Radial and hoop stresses in the tube sheet are eliminated because tube sheet drillings are not enlarged or distorted. Underexpanding, too, is prevented, assuring tight joints on the initial test and during operation of the condensing unit.

Outstanding advantages of the John Crane Control, over other controlled tube rolling methods are: only two electrical working parts; no electronic tubes; light weight and absence of voltage regulator; automatic alignment; elimination of maintenance.

A complete line of standard and long reach ball bearing thrust collar tube expanders are also available from the manufacturer. A new booklet describing these developments and outlining the operating steps is offered.

The Lapmaster

This machine has lifted the lapping process out of the hands of specialists and placed it within the reach of all shops requiring lapping, either in production runs or on individual jobs. Its principles were conceived before the war, and during the war it was proved in the shop and became one of the tools of superfinishes in one of the largest West Coast grinding establishments.

It is interesting that this machine produces a finish so incredibly fine that it must be measured by standards that are 1000 times as accurate as would be necessary for ordinary grinding processes. These measurements are calculated in millionths of an inch—the thousandth part of one thousandth of an inch—.000001″. If the period at the end of the last sentence could be made of dots of one millionth diameter it would take 5000 of them to make the period. That is close work. For this reason highly delicate optical measuring devices must be employed. The most common of these devices is the quartz crystal or Pyrex glass optical flat. The optical flat is lapped to within one millionth of an inch of absolute flatness.

The monochromatic light (one color) is used with

Part of the group of members of the Port Engineers Society prior to the Crane Packing Company demonstration.

Crane Packing Company representatives preparing to demonstrate their equipment to the members of the San Francisco Society of Port Engineers. Left to right: C. W. Nelson and Joseph J. Ures with the Tube Rolling Control and Tube Expander. To the right is R. G. Roshong with the Lapmaster. Busily taking notes is Marshall T. J. Garlinger of MSTS and Chairman of the Board of Governors of the Society.

the optical flat and is mirrored on the surface of the lapped work. The light is reflected from the flat and from the work, the flatness of which is to be determined. The reflections from these two surfaces form interference bands. When the visible bands are practically straight it means that the work is within two or three millionths of an inch of being flat.

When these lines have a curvature equal to the distance between the bands, it indicates that the surface being tested is 11.6 millionths out of flat. If the curvature is equal to three times the band spaces the work is three times 11.6 millionths of an inch out of flat. The visible bands, although appearing straight on near-flat work, are short segments of huge concentric circles and would not be perfectly straight unless both surfaces were of absolute flatness.

Although concerned with highly critical tolerances, the machine is of very simple design. It is of cast aluminum construction embodying a continuously agitated compound tank, an alloy iron lapping plate driven by a gear reduction motor, and three combined work holders and wear rings which are held in place by adjustable bars.

Its operation is as simple as its design. After the work has been placed in the work holders the machine is started by turning on switches to the lapping plate and to the compound agitator. When the lapping plate motor is started the solenoid compound valve opens, allowing compound to run down the feed wire to the lapping plate, where it is evenly distributed on the lapping plate by the rotation of the work holders.

The time of the lapping cycle is automatically controlled by the clock which stops the lapping plate and closes the compound valve at the end of the predetermined lapping period.

The fact that the wear rings are wearing the lapping plate throughout the entire lapping cycle at a greater rate than the wear caused by the work affords a continuously conditioned lapping surface. It is therefore evident that skilled operators are not necessary, as the operation of the machine is only dependent upon the introduction of the work into the work holders and starting the machine.

It is noteworthy that its profitable use is not limited to long production runs, as work done on the machine in one lapping operation may be of different sizes, shapes and heights.

The wear rings and work holders rotate within their orbit on the face of the lap. The lap rotates under the work, as do the wear rings. The work in turn is free to rotate on its own axis in the work holders. This free motion of the work generates a uniform abrading action which is absolutely essential in order to produce uniform concave, convex or flat lapping to within extremely close specified tolerances.

A typical example of such tolerances is the requirement that a piece of work 1″ in diameter be uniformly concave within .0000348 plus or minus .0000116. It is impossible to produce uniformly such extremely close tolerances on any other type of lapping machine.

Stock removal and quality of finish are controlled by the use of proper floating-grit compounds and machine adjustments.

The principal advantage of the machine is the fact that the lapping plate is continuously conditioned, thus affording a controlled and continuous accuracy in flat, concave or convex lapping to within .0000116″, less than one light band per inch of work surface, holding micro-inch finishes of one to three R.M.S.

The smallest model is equipped with a 12″ lapping plate and three wear rings with an internal capacity of 4¼″. Other models are available up to 36″ lapping capacity.

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Japanese Merchant Marine Returns to Pacific Coast

—Big Civic Welcome

THE first Japanese merchant ship to enter the port of San Francisco since before World War II steamed in through the Golden Gate Monday, September 25.

Marking active resumption of Japanese transpacific shipping, the 10,780-ton NYK (Nippon Yusen Kaisha) freighter, *Eiroku Maru*, entered the port to take on a full load of California barley for Tokyo.

A reception for the ship's master, Captain K. Mizutani, and other officers was held by Chamber of Commerce, city and military officials in cooperation with the Pacific Far East Line. Captain Mizutani made an official call on Mayor Elmer E. Robinson at the City Hall at 10:30 Tuesday morning and another on Paul A. Bissinger, San Francisco Chamber of Commerce president. Later in the week the Board of State Harbor Commissioners took the ship's officers on a tour of the waterfront and an inspection of the new Mission Rock Terminal.

Highlight of the entertainment was a special luncheon held in honor of the ship's officers in the Italian Room of the St. Francis Hotel. The luncheon was sponsored by the Chamber of Commerce, business and civic leaders and the Pacific Far East Line.

In a letter to Bissinger, announcing the forthcoming arrival of the Japanese ship, S. Asao, president of NYK in Tokyo, spoke of entry into San Francisco Bay of the *Eiroku Maru*—first NYK ship to touch Pacific shores since 1941—as a "reminder of the old days" when such vessels as the *Asama Maru, Tatsuta Maru, Kamakura Maru* and *Taiyo Maru* comprised the fleet serving the San Francisco-Japan run.

Mr. Bissinger, commenting on the announcement signifying Japan's re-entry into transpacific shipping competition, said:

"This is a very healthy sign, and one which we all welcome. For the past three years the San Francisco Chamber of Commerce has cooperated closely with

(Continued on page 54)

"Eiroku Maru" docked at Pier 45, San Francisco.

Pacific Far East Line joins with the City of San Francisco in welcoming the first N.Y.K. vessel to the United States in the post war era.

S. F. Examiner

Restoring the Port

THE arrival this week in San Francisco Harbor of
the first Japanese merchant ship to dock since the
close of the war, is both a symbol and a promise.
The symbol lies in the fact that the vessel came
without cargo, suggestive of the decline of the port.
The promise depends on what efforts can be made to
restore the dominant position that San Francisco held
before the war in ocean borne commerce.
…pporting that promise is the fact that the
…States Government—routed this
…o instead of to any other
…oof that the Port of San
…o Pacific commerce.
…of restoration of shipping
Francisco is …
How shall this pro…
at San Francisco be fulfilled?
The San Francisco Chamber of Commerce has
just issued a forty-four page report made by the
… Committee
… to be hoped
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… would also
…ts that have

S. F. News

After 9 Years— A Japanese Ship

Japanese trans-Pacific merchant
ipping will be s… …an
ancisco Bay M… …rst
ne since befor… …II.
e arrival of t… …ip-
… Line freighter

S. F. Call-Bulletin

Jap Freighter Docks Here

The freighter Eiroku M…
irst Japanese merchant ve…
call at a California port since
fore Pearl Harbor, arrived at
45 today.
e NYK …

S. F. Commercial News

Civic Luncheon Honors Japanese Ship's Arrival

San Francisco will honor officers
of the first Japanese ship to this
port since 1941 at a civic lunch-
eon in the St. Francis Hotel today.
Th… …ighter Eiroku Maru, op-
erate… …Kaisha
who… …he las
Jap… …is po
in … …ed he
yesterday … Mizut
Her master, Captain … Mizut
and officers of the vessel wil
guests of honor at today's lu
eon. Co-sponsors of the affair
be city officials, the San Fra
Chambers of Commerce an
cific Far East Line, agen
NYK Lines here.
Captain Mizutani made
trips to San Francisco be
war as first officer of NYK Line
Asama Maru.
The Eiroku Maru will load 8500
tons of California surplus barley
for shipment to Tokyo.
A dozen other Japanese vessels
are expected here in the next
three months to load grain and
oil.

Berkeley Gazette

1st N… Sinc…

The fir…
ship to ent…
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will steam…
Gate Mond…
day by th…
ment of th…
ber of Co…
Marking…
Japanese t…
10,780-ton…
Kaisha) f…
will enter…
day morni…
of California barley for Tokyo.
A reception for the ship's mas-
ter, Captain K. Mizutani, and othe
officers is planned by Chamber
Commerce, City and military
ficials in cooperation with the
cific Far East Line. Captain
… will make on official c
…er E. Robinson
… 10:30 Tuesday
… Paul A. Bissi
… Chamber of
Franci… …
president at 11:30 a.m
the week the Board o
bor Commissioners
ship's officers on
waterfront and s
the new Mission
Highlight of
will be a special
held in honor of the s
Tuesday in the Italian
St. Francis Hotel.

S. F. Chronicle

…panese Ship Docks Here: First Since War

…son, and Capt. Jo…
of the board of har…
…ssioners, climbed
a welcome group.
…u then proceeded to
Milling Company pier
where she will load
…,000 tons of barley
will pick up 6,000 tons
on this side and will
to Japan Friday. The
flag flies from her

…s built in Tokio in 1944,
to see any war service
used afte…
…e Japanese…
…hina and S…
she was r…
…d to become…
…estricted po…
…icet.
…ican ships were tied up
men and material to Tokio.
Eiroku is the first Jap-
…hip to pick up relief cargo
for Japan. The last Jap-
ship in San Francisco Bay
the Tatsuta Maru, which
from here November 2.

Luncheon Honoring
arrival of
S·S· EIROKU MARU
In San Francisco
September 25, 1950

Sponsored by the San Francisco Chamber of Commerce,
the San Francisco State Board of Harbor Commissioners
in cooperation with Pacific Far East Line, Inc

Tuesday S…

P F E L

Pacific Far East Line, Inc.

ROUTE OF THE BEARS

San Francisco, Los Angeles, New York, Washington, Chicago,
Detroit · California Representatives for N. Y. K. Line

Japanese luncheon honoring officers and crew of the NYK vessel "Eiroku Maru" at the St. Francis Hotel, September 26. Left to right: Claire V. Goodwin, President of Board of Port Commissioners, Port of Oakland; Captain W. R. Thayer, MSTS, Navy Port Director, Army Transport Corps; T. E. Cuffe, President of Pacific Far East Line; Major General James A. Lester, USA, Commanding General of San Francisco Port of Embarkation; John Porter, Chairman, Marine Committee of S. F. Junior Chamber of Commerce; Lt. General A. C. Wedemeyer, USA, Commanding General, 6th Army; Katsuji Mizutani, Captain of "Eiroku Maru"; Mayor of San Francisco, Elmer E. Robinson; Paul A. Bissinger, Presiding President, San Francisco Chamber of Commerce. (Right hand side of table appears in lower corner of this page).

"Eiroku Maru"

(Continued from page 52)

Japanese leaders and Allied Forces in Japan in a program to hasten restoration of private Japanese-American trade. We hail the arrival of the *Eiroku Maru* as the fruition of our efforts and those of others, and see in this event the beginning of another era of long-term peaceful trade between our two countries.

"I am sorry that there are at this port many ships loading cargoes bound for the Korean war. Let us hope that the near future will bring a return of peace and the resultant cargoes of peace on their way to the Far East."

Top: Another picture of the Japanese luncheon. Left to right: Vice Admiral George D. Murray, Captain Katsuji Mizutani; Lt. General A. C. Wedemeyer; T. E. Cuffe, President of Pacific Far East Line, California representatives for NYK.

Bottom: F. M. Nonaka, Japanese Chamber of Commerce; Elbert E. Jacobs; Alvin Eichholz, Manager of Chamber of Commerce World Trade Department; G. L. Fox, Manager of Chamber; Atsushi Uyama, Japanese Government Overseas Representative; Captain Mizutani; B. J. Fiegenbaum, President, Board of State Harbor Commissioners; Thomas E. Cuffe; Captain L. Ragonnet.

Particulars of Vessel
s/s "Eiroku Maru"

SCAJAP NO.	EOO 8
Length	504 ft.
Beam	72 ft.
Depth	43 ft.
Tonnage, Gross	6900 tons
Tonnage, D/W	10780 tons
Speed (Sea)	10 knots
Built Year	1944
Number of Crew	57
Passenger Accommodation	2
Cubic Capacity, Bale	13300
Cubic Capacity, Grain	14650
Number & Sizes of Hatches	1. 9.00 x 5.85 meters 2. 12.60 x 5.85 meters 3. 3.40 x 5.85 meters 4. 7.20 x 5.85 meters 5. 15.30 x 5.85 meters
Power of Winches	5 tons x 14

Type of Engine (Power)—High & Low Pressure Compound Turbine with reduction gear, 2400 S.H.P. 3 oil burning Scotch boilers.

(Continued on page 65)

(Continuation of top picture): Vice Admiral George D. Murray, USN; Atsushi Uyama, head of Japanese Overseas Agency; Rear Admiral B. J. Rodgers, USN, Commandant, 12th Naval District; Paul R. Leake, Collector of Customs; Rear Admiral Joseph E. Stika, USCG, Commander Western Area and 12th Coast Guard District; Hisao Inouye, President, Japanese Chamber of Commerce of Northern California.

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Running Lights

Hugh Gallagher Named President of Propeller Club

Hugh Gallagher

Hugh Gallagher has been named president of the Propeller Club of the United States in a move which is sure to bind the East and West more closely together as far as Maritime interests are concerned, for Hugh is known, respected and loved throughout the industry. He, with Joe Carson, will form a team that will make its mark on a vital industry.

Hugh Gallagher first entered the shipping business in 1906 when he took a summer vacation job as a shipping clerk with a Standard Oil office in the Philippines. He liked the work so much that he didn't return to school but remained with Standard for three years. After a fling at the railroad construction business in the Pacific Northwest he returned to shipping in 1914 as Agent for the Pacific Steamship Company in Juneau, Alaska. In 1918 Mr. Gallagher moved to New York where he became General Eastern Agent for the Admiral Oriental Line and Pacific Steamship Company. In 1921 he was promoted to Assistant Operating Manager of Pacific Steamship with offices in San Francisco.

He joined The Oceanic Steamship Company as Operating Manager in 1925 and came to Matson as Assistant Manager when Matson bought Oceanic in 1926. He has served as Vice President and Director of Oceanic and was appointed Vice President in charge of operations of Matson in June of 1943, from which post he was transferred East two years ago.

He is a Vice President and Director of Matson Terminals and for many years has been a key figure in Pacific American Steamship Association, Shipowners of the Pacific Coast, and Waterfront Employers and is Past President of the Propeller Club of the Port of San Francisco.

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It's a Daisy

Grant New Head of Coastwise

George H. Grant, nationally prominent investment banker and chairman of the Board of C. J. Hendry Company, largest ship chandlery firm on the Pacific Coast, was last week elected president of Coastwise Line, San Francisco, operators of a fleet of cargo ships between Pacific Coast ports and Alaska. Grant, former head of an investment banking firm bearing his name, and later president of the First California Company, has been identified with Coastwise Line's management for the past year as a director and member of the executive committee.

George H. Grant

When Grant retired from investment banking in 1947 he and L. D. Adams, Jr., purchased control of C. J. Hendry Company. Grant will remain as chairman of the board of Hendry. Under Grant's direction, Coastwise Line will launch an intensive program to develop trade between Pacific Coast cities and Alaska. W. T. Sexton, founder and former president of Coastwise Line, was elected chairman of the board.

George Grant's interest in shipping has been demonstrated by his willingness to get out and work for the industry. He is chairman of the Membership Committee of the Marine Exchange, and has just been appointed a director of that most active of maritime associations.

Bailey Meter Field Assignments

To meet increased demands for expert engineering services in power and process fields, Bailey Meter Company, manufacturer of instruments and controls, has assigned five engineers to new branch office posts. The five men are all graduates of the company's intensive training program which consists of classroom, factory and field training in the theory and practice of measurements and controls as applied to power and process problems.

The names and new business addresses of the five engineers are:

P. K. Bolyard, 184 Pryor Street, S. W., Atlanta 3; George J. Dunegan, 424 Sharon Building, San Francisco 5; L. F. Monahan, 1506 Kearney Street, Denver 7; R. E. Paulson, 7725 Ward Parkway, Kansas City 5, Missouri; O. M. Thompson, 2509 Carew Tower Building, Cincinnati 2.

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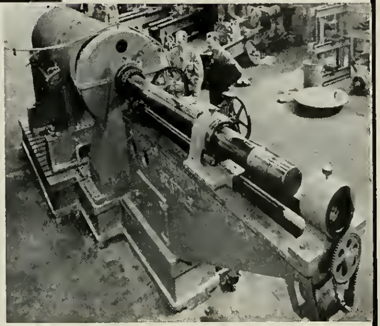
GENERAL OFFICES—GROVE ST. PIER—OAKLAND 7, CALIF.
TELEPHONE: HIGHGATE 4-3188

President, CLAIRE V. GOODWIN; Vice Presidents, STANLEY A. BURGRAFF and DUDLEY W. FROST; Commissioners, JAMES F. GALLIANO and H. W. ESTEP; Port Manager, A. H. ABEL.



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Your Inquiries Are Invited
YUkon 6-5288
1025 BATTERY STREET — SAN FRANCISCO, CALIF

Safety Requirements For Tuna Clippers

(Continued from page 47)

connected to the bilge. The sizes given are for two pumps but two or more pumps of equivalent capacity will be satisfactory.

Boats 125 feet long over all and over, one 2" and two 3" pumps or equivalent capacity.

Boats 100 to 125 feet long over all, two 3" pumps or equivalent capacity.

Boats 70 to 100 feet over all, one 2" and one 3" pump or equivalent capacity.

Boats under 70 feet long over all, two 2" pumps or equivalent capacity.

The only addition to the problem required by the Load Line regulations is that each independent power bilge pump shall be capable of giving a speed of water through the main bilge pipe of nor less than 400 feet per minute, and it shall have a separate direct suction, to the compartment in which it is situated, of a diameter not less than that of the main bilge main. The direct suctions from each independent power bilge pump shall be arranged to pump from either side of the vessel.

Pacific Pumps, Inc., specializes in building and installing vertical spindle, non clog, self priming pumps suitable for bilge service and the pumps will run continuously or intermittently, wet or dry. The only change from the use of a standard pump is that the lubrication must be oil instead of grease.

The No. 1 pump should be permanently submerged, self priming, self starting and should be bronze. No. 2 pump which may have a sea connection should be of the same type but should be fitted with a three way valve. No. 3 pump, if any, should be the same type, and likewise should be fitted with a three way valve.

The tuna boat rules allow the condenser pump to be connected to the bilge but the surveyor has to be careful that the condenser pump is capable of developing the same head as the other pumps in the ship.

No. 15. Fuel Oil Pumps

A transfer pump to move fuel oil from any one tank to any other tank to be connected to a suitable manifold on each side of the pump. The pump preferably should be about 2" and must be a non-return flow type so fuel cannot flow through the pump from the high side to the low side when the vessel has a list.

The Load Line regulations require that all tanks shall be sufficiently subdivided to prevent listing when damaged, and the arrangement of divisional and swash bulkheads is to be such as to avoid excessive dynamic stresses.

Cofferdams are to be fitted between fuel-oil tanks and adjacent culinary water tanks so as to prevent the fresh water from being contaminated.

Care must be taken where a pair of wells are used for fuel and brine; provision has to be made to transfer the fuel from side to side and it must be prevented from flowing from the high side to the low side.

No. 16. Bait Well and Brine Pumps

A transfer pump to be connected between the bait wells in the hold, and between the brine tanks in the brine boats to enable the brine to be transferred from tank to tank.

The pumping system for brine has been changed several times and every time it is changed it has to be gone over to assure that all the functions are present.

First and foremost provision has to be made to clean the various lines of barnacles and sea growth. Then some means has to be provided to transfer the cooling water from any one tank to any other tank. If the cooling water in a well is contaminated and has to be pumped overboard the shortest possible method of doing that is the best, but it must be kept in mind that if the water on one side of the boat is pumped overboard a corresponding well on the other side has to be pumped overboard also.

The system with a standpipe through the hull at alternate wells has the advantage of reducing the piping. Since the standpipes are between well Nos. 1 and 2 port; well Nos. 1 and 2 starboard; well Nos. 3 and 4 port; well Nos. 3 and 4 starboard; well No. 5 port and No. 1 bait box; well No. 5 starboard and bait boxes Nos. 2 and 3, it means that two wells only can be served at the same time and all cooling water in two wells has to be pumped overboard when they are finished off. Since the Rules provide that if it is desired to empty a well on one side, a well on the other side must be emptied to maintain equilibrium, suppose two wells on one side have cooling water in them while two wells on the other side have contaminated water which can be pumped overboard. There is no way to get the uncontaminated cooling water over to the other side of the boat unless the piping provides some means of transferring from side to side.

No. 17. Fresh Water Transfer

There must be no free connection between fresh water tanks. Where tanks are cross connected a check valve must be installed in the cross connection to prevent flow from one tank into the other.

The Load Line regulations state that cofferdams are to be fitted between fuel oil tanks and culinary or domestic water tanks so as to prevent the fresh water from being contaminated. .

No. 18. Propeller Shafts

Propeller shafts are to be carefully calculated as to size, of forged steel, monel or bronze instead of cold rolled steel.

The surveyors were reporting that 4½" shafts and above were made of cold rolled steel. This proved to be an error as the steel companies do not make cold rolled shafting as large as 4½" diameter. To obviate the difficulty with broken propeller shafts, many of them were made of monel as the latter metal bends without breaking as the boat bends under stress. Monel is essentially a nickel-copper product composed of nickel 67%, copper 30%, iron 1.4%, manganese 1.0%, silicon .1%, carbon 1.5%, sulphur .01%, and has no resemblance to steel in any way.

No. 19. Sea Chests

Cast Iron and Threaded sea chests serving the pumps will not be acceptable. Either a bronze sleeve through the hull or a lead sleeve with a bronze connection on the inside to be fitted on the wood boats, and on the steel boats the sea chest to be built as part of the hull.

This was an attempt to bring the boats up to good standard practice. Barnacles and sea growths are prevalent where the vessels go into southern waters and care has to be taken to keep the sea chests open and clear.

No. 20. Ventilation

A 2000 cubic feet per minute inlet and 2500 cubic feet per minute exhaust blower to be fitted to ventilate the engine room. Where the engine is fitted with a supercharger the exhaust blower may be omitted. Foregoing recommendation not mandatory if surveyor decides sufficient ventilation obtainable by alternative method.

Ventilators are required by the Load Line regulations and great attention is paid to the detail of how they should be fastened. This was a requirement of the men and there is seldom any question now about the suitability of proper ventilation.

No. 21 Fish Racks

The fish racks to rest down solid on top of the guard. The bulwarks to be cut off at the proper height to be comfortable for the fishermen from the fore end of the bait boxes to the stern.

The rule is to serve as a warning that the steel boats and some wood boats cannot be submerged below the guard without causing a loss of stability beyond the danger point.

No. 22 Fire Extinguishers

The size, type, loading and

(Continued on page 60)

Tug "Frank G. White", for the Board of State Harbor Commissioners, built by PACECO.

...did twice the job

Quoting an article by Morris Guralnick, Naval architect, in Pacific Marine Review:

. . . "The day after delivery, the "Frank G. White" was given a performance test by her new owners. When set to the task of moving a dredge for a specified distance, she accomplished the job in half the time required by previous craft."

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GREAT WESTERN CORDAGE
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LOS ANGELES • SAN FRANCISCO • PORTLAND • SEATTLE

Paul Revere Smith Retires as U. S. Lines Official

Paul Revere Smith recently retired as assistant to the general manager of the United States Lines after 25 years of service with the company.

He began his steamship career with the Kerr Steamship Company as superintendent engineer and later became operating manager of the Roosevelt Steamship Company which became part of the United States Lines organization in 1931.

Smith received his technical training in the Massachusetts Nautical training ship *Enterprise,* the Massachusetts Institute of Technology and the United States Coast Guard Academy. He served in World War I as a lieutenant in the Engineer Corps of the United States Coast Guard. In World War II he served in the United States Navy for five and a half years during which time he rose in rank from lieutenant commander to captain. After serving as cargo vessel officer of the Joint Merchant Vessel Board, United States Naval Operations at Washington for 12 months, he was transferred to the Navy Yard at New York as assistant machinery superintendent, supervising repairs and overhaul of both foreign and American naval vessels. Later he was assigned to new construction of combat vessels including the 27,000-ton airplane carrier *Bon Homme Richard,* complete in 1944. He was an observer aboard the battleship *Missouri* and the carrier *Shangri-La* when they were launched. Later he returned to Washington at the request of the War Shipping Administration in connection with the operating activities of a special type of cargo vessel for use in the Pacific. When released from active service he returned to his post with the United States Lines.

Paul Revere Smith
(Captain, USN, ret.)

He is a member of the Army and Navy Club of Washington, D. C., and the Propeller Club of New York.

Safety Requirements For Tuna Clippers

(Continued from page 59)

inspection of the fire extinguishers to be reported.

The rules for fire extinguishers are laid down by the Coast Guard and the American Bureau of Shipping. This rule is to insure that they are in good condition, loaded and ready for business.

No. 23 Bait Boxes

The bait boxes must be so constructed that each bait box can be emptied in not more than 5 minutes in any condition of trim.

The emptying arrangements of the bait boxes are such that it is impossible to have them all clear out the water in the same time. In broad general terms the intention is that the bulk of the water shall be cleared in 4 minutes allowing the extra minute to empty the remainder. Barnacles and other sea growths clog the exits and they have to be taken apart and cleaned.

No. 24 Instructions to Master

The "Instructions to Master" prepared by the Naval Architect must be posted in the Pilot House and Galley.

This is a sheet showing how the boat should be loaded so she has ample stability and is perfectly safe. Only recently one of the boats that had operated successfully for six years overturned when a new crew went aboard her. The instructions either had disappeared due to lapse of time or the new crew had ignored them.

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STABILITY *since* 1854

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Westinghouse Names New Division Mgr. At Los Angeles

Morris P. Buswell, an application engineer for the Westinghouse Electric Corporation for the past 17 years, has been named manager of the company's Agency and Specialties Division for the Los Angeles area, it was announced by S. M. Johns, manager of sales at Los Angeles.

The division comprises specialists in various of the company's apparatus products, who provide liaison between the company and its distributors, aiding the latter in the promotion, marketing and application of electrical products.

A native of Utah and engineering graduate of the University of Utah, Buswell joined Westinghouse as a graduate student at East Pittsburgh, Pa., in mid-1933. He served later at Phoenix, Seattle and Salt Lake City prior to his transfer to Los Angeles.

Morris P. Buswell

Chamberlin Companies Move

W. R. Chamberlin & Company and Chamberlin Steamship Company, Ltd. recently moved their offices to 210 Sansome St., San Francisco 4. Their telephone number is YUkon 6-0543.

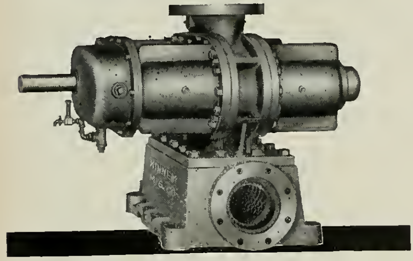
George Ahrens Advanced by Radiomarine

In charge of the Los Angeles district for Radiomarine, George W. Ahrens has recently been appointed Pacific Coast Sales Manager succeeding Harvey Butt, who was transferred to Washington, D. C.

George W. Ahrens

KINNEY PUMPS

WHEREVER BARGES and TANKERS PLY THE WATERWAYS



Kinney HQ Rotory Cargo Pumps are built for tough service, to speed up delivery and keep barges and tankers on the move. They're ready to pump whatever cargo is offered — handling any liquid from molasses or crude oil to sea water or gasoline. The pump rotors, driven by hardened steel timing gears, give smooth, non-pulsating delivery and strip tanks clean even after years of service.

Kinney HQ Pumps are available in a wide range of models for on-deck or below-deck installation. Construction includes pumps in iron, steel, or bronze; plain or steam jacketed, with capacities to 3,000 bbls. per hr. Write for Bulletin L48.

KINNEY MANUFACTURING CO.
3554 WASHINGTON ST., BOSTON 30, MASS.
New York • Chicago • Cleveland • Philadelphia • Los Angeles
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Admiral Mather Heads De Laval Division

Rear Admiral Paul L. Mather, USN (ret.), has become associated with The De Laval Separator Company, New York City, as Manager of its Precision Equipment Division, and Special Assistant to the President.

He has been Shop Superintendent of the Navy Yard at Portsmouth, N. H., building submarines. He also served as Superintendent of the shop in which electrical equipment was manfactured for all ships built in naval shipyards. For a time he was also executive officer at the Naval Ordnance plant in West Virginia. In 1940 he was assigned to the Bureau of Ships.

During World War II Admiral Mather commanded the U.S.S. *Housatonic* and the U.S.S. *Ancon.* He participated in the heavy actions at Salerno and Casablanca and was awarded the Legion of Merit for combat action in the Sicily landings. Later Admiral Mather served as head of the Logistics Department of the Army-Navy Staff College and in 1946 was assigned to the National War College.

In January 1947 Admiral Mather was called back to active service as Deputy Administrator of the War Assets Administration. He was appointed Associate Administrator by the President in January 1948 and in June 1949 he was appointed Administrator.

Admiral Paul L. Mather, USN (Retired).

In May 1950 President Truman appointed Admiral Mather Acting Member of the newly created Federal Maritime Board which duties he completed August 21.

Pacific Transport Staff Changes

PAcific Transport Staff Changes....

Pacific Transport Lines has announced the following staff changes:

Lebbeus Curtis, has been appointed assistant to the operating manager, James G. McManus. Curtis comes to the Line from the Manila office of Everett Steamship Company where he was port captain for the past four years. He is the son of the well known marine surveyor Leb Curtis.

Ernest Gibson, formerly chief clerk in the San Francisco office, has left to join the staff of the new Hawaii office as assistant manager.

Robert Hudson, San Francisco District Freight Agent, has been transferred as assistant to Los Angeles office manager L. C. Munson.

"The PLIMSOLL LINE is a seaman's assurance of a safe voyage for his ship from port to port. 'VIA THE PORT OF LONG BEACH' is a shipper's assurance that his cargoes will be handled with the speed and economy which result from the finest of port facilities."

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VIA THE PORT OF LONG BEACH
The Port of Long Beach
AMERICA'S MOST MODERN PORT ★ CALIFORNIA

Officers of the Propeller Club...Port of Honolulu

Officers were elected at the annual meeting of the Port of Honolulu Propeller Club to hold office for 1950-1951. Left to right: William R. Norwood, Castle & Cooke, Ltd., second Vice-President; John W. Cantillion, American Bureau of Shipping (Retired), Secretary; Howard B. Crites, Matson Navigation Company, President; Warren S. Titus, Theo. H. Davies & Co., Retiring President; Frank H. Gallagher, American Bureau of Shipping, first Vice-President; M. B. Freeman, Inter-Island Steam Navigation Company, Treasurer.

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OF MARINE SPECIALTY CO.

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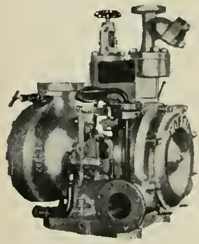

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Save weight, space, and steam . . . compact, quiet and dependable, Coffin Turbo Pumps are sold and serviced by leading marine engineers in every principal port.

RATINGS

Steam Pressures to 850 PSI
Back Pressures to 200 PSI
Pump Capacities to 500 GPM
Discharge Pressures to 1100 PSI
Liquid Temperature to 300°F.

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Maritime Board Completed —Robert W. Williams Appointed

Robert Wood Williams of Baltimore, Maryland, wa nominated by President Truman on September 14, to b a member of the Federal Maritime Board of the Department of Commerce for a term ending June 30, 1954 He was confirmed by the Senate on September 21, and was sworn in by the Secretary of Commerce on September 25.

Williams was born in Baltimore, Maryland, May 29 1890. After graduation from Groton School, Groton Massachusetts, in 1907, he studied at the Lycie Descartes Tours, France, in 1908. He received the A. B. degree from Harvard College in 1912, the A.M. degree in 1913, and the LL.B. degree from the Harvard Law School in 1915 and was admitted to the bar the same year.

He served as Captain, Intelligence Division, Genera Staff, U. S. Army, in 1917 and 1918. Since 1917 he ha been a member of the firm of Ober, Williams, Grime and Stinson, Baltimore. He has specialized in admiralty law and is editor of a law periodical, "American Maritime Cases." He is a director of the Ellicott Machine Corporation, and Reid Avery Company, and is also a trustee and member of the executive committee of Johns Hopkins University, a trustee and chairman of the executive committee of Enoch Pratt Free Library, and a trustee and former president of the Family and Children's Society, of Baltimore, a member of the American, Maryland and Baltimore bar associations, the Maritime Law Association of the United States (of which he is vice-president), and the Phi Beta Kappa honorary scholastic society, and a vestryman of Emmanuel Church of Baltimore.

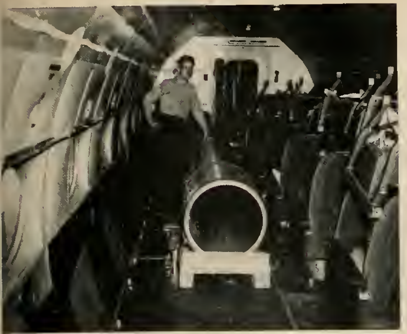
Official photograph of members of the Federal Maritime Board. Left to right: Albert W. Gatov; Vice Admiral Edward L. Cochrane, USN (Ret.), Chairman; Robert W. Williams.

Leo Archer Visits West Coast

Leo. E. Archer, General Passenger Traffic Manager for Moore-McCormack Lines, Inc., has been visiting the West Coast offices of his company and meeting the innumerable friends of the days when he was active on the West Coast with the Panama Pacific Line.

Moore-McCormack was host at a reception for Archer in the Garden Room of the Fairmont Hotel on the evening of September 15.

Shaft Liner Flown to Singapore



Roland Stewart, cargo manager of Transocean Air Lines, with a 4,000-lb. bronze tail shaft liner which was flown from Oakland Municipal Airport in a Transocean plane for the American President Lines' vessel "President Harding" at Singapore. The bronze liner was flown to Oakland from Doran's plant at Seattle where it was manufactured.

Pyrene Releases New Air Foam Catalog

An entirely new brochure on air foam or mechanical foam for fire-fighting has been released by the Pyrene Manufacturing Company, Newark, N. J., and is available on request to companies having oil storage tanks and other large flammable liquid fire hazards.

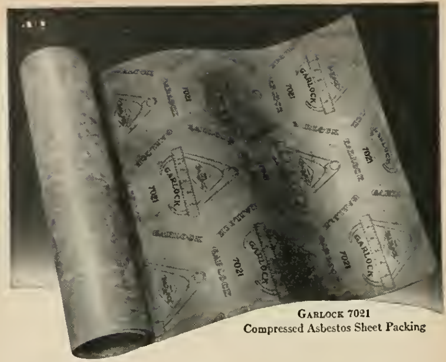
It describes air foam, methods of application, high and low expansion types of foam compound, specifications and operating characteristics for five sizes of portable playpipes, mobile and stationary foam proportioning tanks and installations of the auto induction, pressure line inductor, "around-the-pump" proportioner, self-contained and motor fire apparatus types. A selector valve for use with wetting agent and foam compound carried on motor fire apparatus is also shown. Twenty-four pages, well illustrated, 8½x11.

"Eiroku Maru"

(Continued from page 54)

Number of Propellers	One
Bunker Consumption (Fuel Oil)	25 KL
Fresh Water Capacity	
Drink Water	300 tons
Fuel Water	300 tons
Normal Range	20,000 miles

In the early 1930's the Japanese carried 65 per cent of their foreign commerce, 100 per cent of their domestic trade, and 92 per cent of their "near seas". The shipping industry in the United States now agrees, in line with national policy, that the Japanese Merchant Marine should be allowed to rehabilitate itself, and that a fair basis is that suggested for ourselves in the Merchant Marine Act, 100 per cent of domestic trade and 50 per cent of foreign. It is estimated that the Japanese should be entitled to carry up to 2,400,000 tons annually and that is a fair measure of their present potenrial world position.



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Compressed Asbestos Sheet Packing

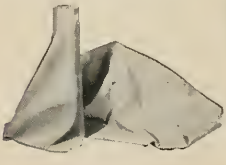
Superior Performance

Top performance is the result of ability, experience and extra effort. GARLOCK Sheet Packings are superior gasketing materials because of careful selection of raw materials, experienced workmanship and constant quality control.

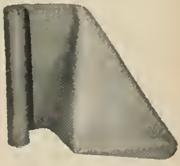
GARLOCK 7021 Compressed Asbestos Sheet is exceptionally strong and tough. Gives superior service against gasoline, oil, gas or steam at high temperatures and extreme pressures.

GARLOCK 22 Red Rubber Sheet Packing is tough and resilient. Specially recommended for hot or cold water and low pressure steam joints.

GARLOCK 660 Cork-Fibre Sheet Packing combines granulated cork and vegetable fibre into a strong compressible sheet; treated with an oil resistant binder. An ideal gasketing material for oils and solvents at temperatures up to 212°F.



GARLOCK 22
Red Rubber Sheet Packing



GARLOCK 660
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Diesel Engines & Generators

3—100 KW, DC Diesel Generators; with 150 HP, Superior Diesel Engines, Model GDB-8, 1200 RPM direct connected to Delco 100 KW, DC Generator, 120/240 Volt.

2—100 KW, AC Diesel Generators, with 150 HP General Motors Engines, Model 3-268 A direct connected to 100 KW, 3 phase, 60 cycle, 440 volt, AC Generator.

7—425 HP General Motors Diesel Engines, Model 8-268 A, 1200 RPM with either 290 KW, DC Westinghouse Generator, 240/120 volt, or 250 KW, AC Westinghouse Generator, 3 phase, 60 cycle, 440 volt.
3 Unused Engines with DC Generators.
4 Good Used Engines and DC Generators.
7 Unused Engines and AC Generators.

2—1840 BHP General Motors Diesel Engines, Model 16-258S, 900 RPM.

2—1880 HP Fairbanks Morse Diesel Engines, Model 38-D, 800 RPM.

Complete information, specifications and quotations on request.

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Address ....
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Long Distance Towing and Tug Design

(Continued from page 34)

that higher speed diesels and electric drive would furnish substantially additional advantages, and so during the year following the building of the *Elizabeth*, two additional tugs were built with twin engines and generators driving a single screw. These were known as the *Thomas and William* class and had a similar hull design to the *Elizabeth* so that they too could operate either on the New York State Barge Canal or in ocean towing. The advantages of diesel electric drive were early apparent in spite of the increased cost, and since that time—counting these four, a total of 34 tugs with this type of drive have been constructed or ordered for us and have proven to be completely dependable, economical and satisfactory. The installed horsepower varied from 950 HP in the *Sheila* type up to 1900 HP in the tug *Edmond J. Moran*. This latter tug was built in 1940 and was a variation in hull design as she was intended principally for ocean towing.

When considering the design of the *Edmond J. Moran* the problem of length was given great consideration. For operating while at sea an over all length of 150′ to 200′ would be desirable, but such length when operating in constricted waters would prove a serious handicap. In New York Harbor, such a length would be a hazard to regular operations. It was decided that a length of approximately 125′ over all would be most satisfactory considering the size engine to be installed and the various services she might be called upon to perform. This design has proven most satisfactory. This tug is now engaged regularly in running between South Amboy, N. J. and approximately 20 miles beyond Sandy Hook, making this trip between ten and twelve times per week.

The start of hostilities of the last war found this tug engaged in towing a large hydraulic dredge to the upper base in Greenland to work on the development of that base. She immediately returned to New York at the conclusion of that tow and after numerous tows on the East Coast in spite of the submarine menace, during one of which tows she succeeded in removing all of the passengers and crew of a torpedoed ship despite the presence of the enemy submarine, she was sent to the West Coast in the service of the Government, and for about 18 months operated in the Aleutian waters in salvage and rescue work as well as in the distribution of supplies. The waters of this area are without doubt among the stormiest and roughest in any part of the world and for some weeks on end the minimum wind velocity is over 30 to 40 miles per hour. Despite such conditions, this tug performed continuously with no lost time for repairs and in the roughest of sea conditions.

The Maritime Commission during that time considered the problem of moving large quantities of petroleum products after the tremendous loss of tankers in the first years of the war. It was decided to attempt this movement through the construction of concrete barges and large ocean-going tugs, and the type known as the V-4 was placed under construction. In the initial stages of design, it was the intent to use approximately 2800 SHP diesel engines, but obtaining such engines proved impossible. By the installation of Kort nozzles and using only 2250 HP, an effective towline pull, equivalent to what would have been produced at the higher HP without Kort nozzles, was effected. 49 of these tugs were constructed and performed outstanding feats of ocean owing service throughout the entire world, with the xception of that part under the control of the Japanese etween the East Coast of India and the West Coast of ustralia, and along the East Coast of Asia. Some of hese tugs towing alone outdistanced two of the Navy ype ATF pulling an identical tow, much to the surprise f everyone as they had only a little more than one-third he BHP of the other two combined. These tugs, like he large salvage tugs of Europe, can only be operated rofitably in commercial practice on extremely long and eavy tows. Two such tows were performed by my company with this type tug towing dredges built at Tampa, la., from there through the Panama Canal to the Island f Banka, southeast of Singapore. The length of this ow was approximately 13,000 miles. The first of these ows was made in elapsed time of 89 days, and the second in 84 days, with no damage occurring to either tow. he 46 remaining tugs (3 were sunk) are not in operation now but are in the reserve fleets and can be made vailable should the need arise.

After the end of hostilities, my company gave prolonged consideration to the design of a new type of tug hat could operate with equal facility in ocean towing nd in the handling of large vessels in New York Harbor. After much investigation, the design of this new ype, known as the *Grace Moran*, was approved and five f these vessels were ordered built. Before the first was carcely in frame, it was decided that most of these tugs hould be kept always in New York Harbor for docking nd undocking work, and to ensure that they would not e used for ocean towing, the installation of full crews' quarters and capstans and towing machines was purposely omitted.

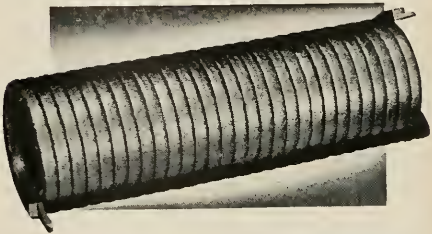
The overwhelming preference for the diesel engine over all other types of prime mover can be readily understood from the many advantages inherent in this installation. Larger horsepowers can be installed in a smaller size machinery space. For a given amount of fuel capacity greater cruising range is afforded. Some reduction in the amount of crew has usually been obtained and greater cleanliness and less corrosion are experienced with this type of power plant as against a steam installation. One of the greatest economic advantages of diesel installations is the elimination of layup time for washing boilers and for maintenance and repair of the power plant and the wasted running time required for obtaining fuel and water. This substantial saving in time is converted to more productive working hours and higher earnings at little increase in expense.

The advantages of electric drive very definitely outweigh the added cost of this installation. Among the more important advantages are pilot house control and also control from the after steering station on the upper deck, constant rotation in one direction of the diesel engine and the use of electric auxiliaries for starting the diesel, for steering engines and for automatic electric towing machines. Such auxiliaries have proven to be completely dependable and satisfactory. An additional advantage of electric drive is the ability to furnish sizeable quantities of electric power to other vessels and to shore connections and such service has been supplied on numerous occasions.

The advantages of having the instant control of the movement of a vessel under one person are too numerous to list and most are readily apparent. In the delicate

(Continued on page 70)

Super Efficient



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American-Hawaiian, Williams, Dimond Picnic

In September of each year, the American-Hawaiian Steamship Co. and the Williams, Dimond & Co., their wholly owned subsidiary and Pacific Coast Agents, leave their intercoastal and Far East transportation duties behind while they move into the country to enjoy their annual golf and picnic day. This year, on September 16th,

Top row, left to right: T. W. Buchholz, Manager, Metropolitan Stevedoring Company; Mrs. Harold Austin, Purchasing Dept., Williams, Dimond & Co.; Ellison Ebey, Assistant General Manager, California Stevedoring & Ballast Co.; A. F. Cummings, Crane Co.; E. M. Slevin, Insurance & Claims Agent, Williams, Dimond & Co.; John Davidson, Secretary to Roger Lapham; Charles Fedderman, Retired Treasurer of American-Hawaiian Steamship Co.; Emmett Mishler, Asst. Operating Manager, Williams, Dimond & Co.; Mrs. Melvin Hager, Purchasing Dept., Williams, Dimond & Co.; Melvin Hager, Terminal Dept., Williams, Dimond & Co.; Joe Blackett, Jr. Bottom row, left to right: Joseph Blackett, General Manager, Williams, Dimond & Co.; Mrs. Emmett Mishler; Frank Kugelberg, Vice-President, Williams, Dimond & Co.

Not in the picture, but in other groups or unavoidably missing from their favorite annual outing include: Roger Lapham, former Chairman and President of American-Hawaiian; Dearborn Clark, Vice-President, American-Hawaiian; E. L. McCormick, President, Williams, Dimond; H. W. Poett, Jr., Secretary and Traffic Representative, Williams, Dimond; Tom Plant, former Vice-President, American-Hawaiian; F. C. Hardy, Treasurer, Williams, Dimond; George Cooley, Traffic Manager, Williams, Dimond; and, of course, John Pruner.

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240, including employees, their families and friends, enjoyed their golfing and picniking at the Sonoma Golf and Country Club, Boyes Springs, Sonoma, California, where their outings have been held annually since World War II.

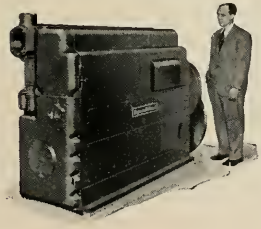
This annual day was started in 1931 by their Purchasing Agent, John Pruner, now retired, but still attending and lending a hand in preparing the outing. It was through John that we were able to obtain the picture on this page. Edward Slevin, Insurance and Claim Agent for Williams, Dimond & Co., has taken over the tournament duties since John's retirement.

The first outing in 1931 was held at the Oak Knoll Golf Club, East Oakland, and from there they chose to go further into the country, and for many years except during World War II, enjoyed their outings at the La Rinconado Country Club near Los Gatos. This year there were over 100 prizes for golf and gate drawing winners; Stanley Freese won low gross, and Curtis Myers low net for the men; Mrs. Bernice Coughlin won low gross, and Mrs. J. Colgan low net for the women.

Ingersoll-Rand Announces New Type of Diesel

A completely new type of diesel engine, in the 195-375 hp range, has been announced by the Ingersoll-Rand Company, New York. Designated as the TS diesel, this engine incorporates many new design features which have resulted in a previously unattainable combination of characteristics. According to the manufacturer, the TS diesel can easily be made portable, but is not automotive-type; it is small in size, but with big-engine design; light in weight, but with moderate speed; powerful, but with low exhaust temperature; perfectly balanced, but with no balancing devices. It is a four-cycle, 7"-bore, 8½"-stroke, single-acting engine with a weight of about 30 lbs per hp, and a fuel consumption of 0.40 lbs per hp-hr. The TS diesel is said to fill a long-felt need in the industry for an engine in the 900-1000 rpm range.

Normal starting is by 250-psi air admitted to all cylinders in turn through a starting-air distributor. Other methods of starting can also be furnished. The TS Diesel is designed for mounting either on a simple concrete base, or on welded-steel skids where portability is desired.


New Ingersoll-Rand Diesel

After more than two years of performance testing, the TS diesel is now in production, available in 6 or 8 in-line cylinder designs, capable of delivering 195 to 375 hp at 900 to 1000 rpm.

For literature or additional information write Ingersoll-Rand Company, 11 Broadway, New York, or any of its branches located throughout the world.

A man finally bought a parrot at an auction after some spirited bidding.

"I suppose the bird talks," he said to the auctioneer.

"Talk?" was the reply, "He's been bidding against you for the past half hour."

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Long Distance Towing and Tug Design

(Continued from page 67)

operation of approaching a large vessel at sea in rough waters for passing a tow line, such maneuvering can be performed much more quickly and safely, reducing the hazard of contact with the other vessel and possible serious damage. In maneuvering in close quarters with or without a tow, the pilot is confident of his instant control of the speed and direction of the propeller as well as the actions of the rudder, and so can maneuver more safely and quickly. In passing through locks such as on the New York State Barge Canal, pilot house control through electric drive has reduced the time for locking through to about 50% of that formerly required.

In long distance ocean towing, the automatic electric towing machine has been found to play a most important part through its inherent ability to maintain selected line tensions and keep the tow line length at the desired scope without supervision. These two primary advantages of automatic towing machines have come to attention many times, particularly under adverse weather conditions. Through the ability of this machine to pay out in times of excess pull and to reave in when too little pull produces an excessive bight, the wear and tear on the towing cable has been substantially reduced and the life of the cable prolonged.

Of interest to those concerned with ocean-going tugs is the effective tow line pull that a particular tug is capable of exerting. We have made numerous tests on dynamometers with the tug having no forward velocity and have found a fairly consistent relationship between installed horse power and tow line pull, resulting in a pull of between 28.5 and 30 lbs. pull per SHP. This is not a true measure of the pulling ability of a tug in a seaway and other factors such as more displacement, greater draft and general hull characteristics vary this relationship in actual practice.

The general characteristics and more detailed descriptions of each of the different classes of vessels named above have been purposely omitted from this paper as they are readily available to all who are interested, and obtainable at the Engineering Society's Library at West 39th Street, New York City. The development of the ocean going tug to its present day high state of efficiency, dependability and economy is a tribute to the engineering professions of this country and also to the men who go down to the sea in these comparatively small craft in all conditions of weather to perform their daily tasks. On occasions too numerous to mention, the crews of these craft have fought the elements and stood by with their tows, frequently losing them and having to pick them up again two and three times on the same voyage, and often at great personal risk. The Insurance Underwriters who were on the risks of some of the more hazardous tows that have been successfully accomplished by our ocean tugs will offer tribute to the personal courage of the crews and the engineering perfection of these vessels and their plants. I have hesitated going into the technology, research and development that were necessary in the fields of diesel engine construction, shipbuilding, welding and electronics necessary to produce the results as they have been fully covered in other papers. I have tried to show that these craft are economic tools whose design has developed continuously through the years, with the result that the modern tug incorporates features permitting great flexibility of operation.

Honor Japanese Vessel Arrival

Stanley Burgraff, First Vice President, Board of Port Commissioners, Oakland; W. J. Bush, President, West Coast Terminals; Irving Lyons, Traffic Manager, California Packing Corp. Picture was snapped during the Chamber of Commerce luncheon honoring the arrival of the first post-war Japanese vessel to dock at San Francisco.

Picture courtesy of J. Walter Frates

Welding Conference Papers

(Continued from page 21)

the direction of design based on plastice deformations rather than elastic deformations.

This paper is directed towards finding out what happens to the strain distribution and shifts of points of counterflexure when a welded frame is subjected to a concentrated load which will cause plastic deformations in part of the structure.

The techniques in finding such an answer are based upon the use of electrical SR-4 strain gages.

A few of the conclusions resulting from this study are as follows:

1. For overload of the welded frame, stresses were developed sufficient to cause plastic flow in several parts of the frame, particularly the inner portion of the knee closest to the concentrated load; but these stresses did not cause sufficient damage to the frame to disqualify it as a useful structure. In a sense, it functioned better under a second or third load application since the proportional limit of the material had been raised.
2. Vertical stiffeners at the point of loading helped to develop the full strength of the web at this section.
3. At termination of loading after a permanent deflection of 2 in. had developed, the compressive stress in the flange of the horizontal member was seventy per cent of the ultimate strength of the material indicating adequate design of stiffeners.
4. Strain distributions in the web of the horizontal member of the knee at permanent set loadings were irregular indicating plastic adjustment. However, subsequent loading after load release from permanent set loading indicated regular strain patterns.
5. In general, strain readjustments were observed with each increment of loading of an overload nature, but for repetitions of this loading all actions were regular and consistent. This stabilizing effect of repeated loading continued up to a loading that was thought to be close to ultimate collapse.

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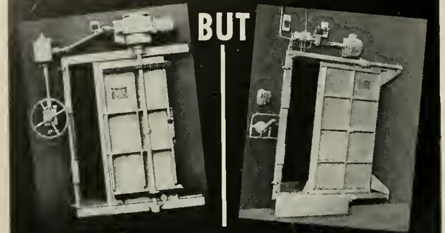

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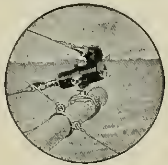

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Rules of the Road

(Continued from page 43)

the expenditure of money for equipment and personnel to maintain schools on both the East and West coasts for the training of deck officers in the operation and use of radar equipment.

This training should surely be taken at the earliest possible convenience by all deck officers who are not already thoroughly familiar with the operation and use of radar equipment.*

Now for another situation which is quite a common one. Imagine that you are the mate on watch on vessel "A" and that you are in a fog and have taken the steps described in the foregoing situation. Then you hear the fog signal of vessel "B" and cannot tell exactly which direction the signal is coming from. *What would you do?* Again stop for a moment and decide what your action would be before reading farther. First, Article 16 applies. Since in the above situation the direction of the fog signal of vessel "B" cannot be determined it is well to assume that vessel "B" is forward of the beam. In such a case Article 16 requires that you stop your engines if the circumstances of the case admit, (that is, if current is not setting you onto the rocks or you would not be putting your vessel into danger by stopping the engines), and remember in case of collision you may be required to prove that stopping the engines would have endangered your vessel. After stopping your engines you are then required to navigate with caution until danger of collision is over.

Let us go farther in our assumptions now and assume that you heard the fog signals of vessel "B" change from one prolonged blast every two minutes to two prolonged blasts every two minutes. What would it indicate to you? This signal merely indicates that vessel "B" has stopped making way through the water. It does not necessarily indicate that the vessel is incapable of starting up her engines and making way but that at the time of the two blast signal she is lying dead in the water. Now suppose that instead of Vessel "B" changing her signal from one prolonged blast to two prolonged blasts she had changed from one prolonged blast signal to a prolonged blast followed by two short blasts. What would the signal indicate to you? Such a signal would indicate that Vessel "B" was out of command; that is, that something had happened on board her which makes it impossible for her to maneuver, and all keeping out of the way must be done by vessel "A," thus requiring even a greater degree of caution to be exercised by Vessel "A." It does not necessarily indicate that Vessel "B" is not making way through the water.

In regard to this particular point there seems to be a difference of opinion by some authorities on the Rules of the Road. There are some who maintain that a vessel which is out of command (that is, not able to maneuver) should give the prolonged blast followed by two short blasts as described by Article 15 (e) regardless of whether she is making way through the water or not. Other authorities contend that a vessel which becomes out of command in a fog should give the prolonged blast followed by the two short blasts from the moment she is out of command until the moment she becomes completely stopped and is lying dead in the water, at which time she should give the two prolonged blasts as described in Article 15 (b). To my knowledge there has been no court decision handed down on such a case. In either case, though, upon hearing either of the two signals Vessel "A" should navigate with extreme caution so as to be able to avoid a collision by her own actions without having to rely on any action on the part of vessel "B".

---

*Information regarding enrolling for these courses may be had at U. S. Maritime Service Enrolling Office.

Let us assume another situation which might occur to any watch officer. Suppose that you were on watch on the bridge of a vessel in Inland waters of the United States on a clear dark night and through some misfortune your vessel became disabled so that you were out of command. *What would you do?* Remember now that there is no Article 4 in Inland Rules and no provision for Out-of-Command lights. The sensible thing to do then would be to anchor and show your anchor lights if the conditions would allow such action. If it was impossible to anchor you should warn any approaching vessel by the danger signal or you could attract their attention by the flare up light or detonating signal as authorized in Article 12 or you could warn the approaching vessel of your difficulty by use of the blinker sending the letter "F" meaning, "I am disabled. Communicate with me." The letter "F" on the blinker should immediately register with the officer on watch on the approaching vessel and warn him that he would have to keep clear of you. If the approaching vessel continued to approach so as to cause a danger of collision you could warn him further with the blinker by sending the letter "U" meaning, "you are standing into danger," or by sending the letter "K" meaning, "you should stop your vessel instantly."

In future issues it is planned that we shall discuss situations which arise in regards to identification of lights, meeting, crossing, and overtaking situations and the action which should be taken in these various situations, as well as the proposed changes in the Rules of the Road.

Burtoning Stresses

(Continued from page 46)

zontal arc through which it can safely be swung with the guys secured to vang posts.

6. Limit the line pull of the winches for each set of gear to that force which the gear can safely withstand with provision for adjustments to increase capacity when necessary for a specific lift.

7. In lieu of the above, provide an ammeter calibrated in terms of line pull in view of the winch driver so that he will know when the fall tension is excessive.

8. To reduce the thrust on the boom and improve the fleet angle to the winch drum, lead fall from winch drum to vang post and so up to the gin block parallel with the guy.

9. Increase the size of winch drum and provide a level winding device which will prevent overriding turns.

No Novelty to Him

A doctor was examining a man who had come to him for the first time. Satisfied at last, the doctor looked at him gravely. "You are in bad shape," he said. "What you need is a sea voyage. Can you manage it?"

"Oh yes," replied the patient. "I'm second mate on the *Anna Marie*, just in from Hongkong."

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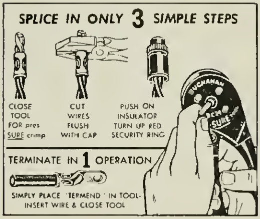
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Radar and Loran Training

(Continued from page 36)

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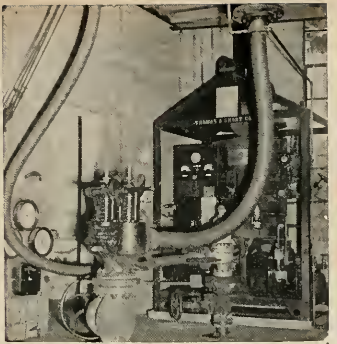

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Westinghouse to Give Month's Pay To Employees Entering Military Service

Westinghouse Electric Corporation employes who have been with the firm for more than one year will receive a month's extra pay if they enter the armed services while active conflict continues.

This policy, retroactive to July 1, was announced by Tom Turner, vice president in charge of plant labor relations in Pittsburgh. The Company also will pay group life insurance premiums for a period of three months for those entering military service.

The same re-employment rights as those which applied for World War II veterans also have been put into effect.

In addition to the extra month's pay, employes will be paid for any current year's vacation time which they might still have coming but have been unable to take.

Dredge "Sandpiper"

(Continued from page 27)

in such a direction as to propel the ship ahead; by pulling the lever back the ship is caused to move astern. Each control stand is provided with indicating instruments showing propeller revolutions and motor load current.

The dredge pump which provides suction for both drags is driven by a 600-hp, 240-volt, 185/200 rpm shunt-wound, d-c motor, both of which are shown in Fig. 6. The master switch for pump motor control is located in the port drag tenders house. The dredge pump motor is energized from the 240-volt auxiliary power bus fed by the two 500-kw auxiliary generators previously mentioned. The controller has 21 points of speed control between 185 and 200 rpm by motor field changing but no running speed below 185 rpm.

Each drag hoist is operated from a "finger-tip" controller located in the respective drag tender's house. The controller varies the field current of an exciter which in turn regulates the voltage of the drag-hoist generator and hence the speed of the hoist motor. These motor-generator sets and their exciters are shown in Fig. 7. Each drag-hoist motor-generator set consists of a 100-hp, 230-volt, 1150-rpm motor driving a 65-kw, 240-volt dc generator and 0.9-kw generator exciter. The drag-hoist motors are solidly connected to their respective generators and are rated 75 hp, 690 rpm.

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When the ship is not operating, the main diesel plants can be shut down and power is provided to the dc auxiliary bus from two 100-kw 240-volt d-c diesel-driven generators. These generators can be paralleled with the main 500-kw generators if required. A 30-kw emergency diesel generator is also provided.

The accommodations and equipment provided on the dredge are an excellent example of the modern marine designers' effort to combine the maximum in utility with consideration for the comfort and health of the operating personnel.

Pacific Marine Review

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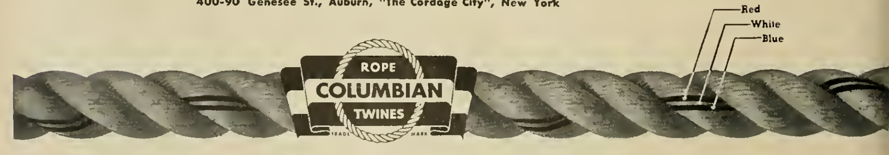


Pacific MARINE REVIEW

What of the Japanese Merchant Marine?

THE rapid approach of peace treaty negotiations for Japan suggests that Americans should arouse themselves to a study of the effects of such a treaty on our basic interests. A treaty is coming, and we would not delay it. MacArthur says that America's as well as Japan's welfare require it and that is sufficient for most Americans. Its contents, however, will affect all of us and all of us should be on the alert.

"American welfare" is not an intransitive expression incapable of definition. It is not the selfish aspirations of a few individuals or even a few industries. It is the *welfare of Americans,* and since the welfare of Japan is linked with the welfare of America, the impact of Japanese industry on American industry should be well considered, not by State Department theorists but by those who can and will face facts and estimate results. We are about to be given a State Department hurry-up on a blithly composed document that will consist of "peaceful" generalities, with the working parts left to internationalists who will later yield everything rather than upset the master plan. We believe that full understanding should be reached *before the treaty is signed.* And one of the subjects requiring understanding is the merchant marine, not only in relation to Japan's economy but to that of the United States and to American shipping.

Sometimes it seems to us that our country is too big, for there are too many areas of it which fail to appreciate the importance of our external trade, and the means by which it is maintained, with the result that shipping is regarded as a matter for the ports to worry about whereas almost every factory and farm has a stake in it; and it needs protection. Low priced competition, if given an opportunity, will destroy it.

Shipping people in Japan would like to have a big merchant marine and are well on the way to getting it. They had a merchant marine of 4,000,000 tons before the war and there are those even in Washington who want it restored. Why?

The 4,000,000 ton figure represents a fleet that carried 65% of Japanese overseas export and imports, 92% of Asiatic trade and 100% of domestic at a time when American ships were carrying less than 30% of American exports and imports. There is no present justification, —practical, theoretical or altruistic,—for any such tonnage.

The plea is made that Japanese economy requires the income from shipping, and that the foreign trade of Japan would be less inflexible in Japanese-controlled ships. The latter claim is true enough but there is little basis for the former. Japan's shipping prewar did not account for more than 7/10 of 1% of her national income and even against this figure there were offsets. For instance, fuel oil had to be purchased abroad and so did steel and other equipment for ship building. Could not the money and effort being put into ships be better spent on other forms of production which would bring a bigger cash return? Anyway, why 4,000,000 tons? There is no present likelihood that Japan's foreign trade will reach its prewar figure, in which a large percentage was with Manchuria, Russia and China. Asia represented 53% of Japan's imports and exports.

As an absolute maximum, the proportions which our Merchant Marine Act suggests for American shipping should be acceptable for Japanese shipping. These proportions are 50% overseas trade with America and 100% of domestic. The prewar figure of 92% of Asiatic trade is a logical one.

American shipping would be seriously undermined by unrestricted Japanese competition in which the labor costs and business routine of Japanese companies cannot be met under our standards. Should our shipping be required to compete with an industry that is of only minor importance to Japanese economy but of vital importance to America on whom even the Japanese must depend?

Sometimes the "neighbors" we are told to love could be ourselves. That's in the Commandment too.

We are happy to announce that we have arranged to bring together the PACIFIC MARINE REVIEW and The LOG, effective with the January, 1951, issue. This step will result in a national maritime journal of top significance and stature, backed by 86 combined years of personal marine publishing by the undersigned.

The PACIFIC MARINE REVIEW was established in 1904 in Seattle, Washington, where it was published until 1912 when James S. Hines acquired the magazine and moved it to San Francisco, where it has since been published.

Miller Freeman began marine publishing in 1902 when he established PACIFIC FISHERMAN, followed later by PACIFIC MOTOR BOAT and MOTORSHIP. The LOG was acquired in 1941 and was built into one of the most dramatic and modern of all marine journals during World War II.

The LOG, as a national marine journal of America's maritime industries, will be larger, finer and more influential than ever. It will offer the largest audited paid circulation by far among ship management and operating men who do over 94 per cent of the industry's purchasing. Its editorial material will originate from a highly experienced staff operating on all American coasts.

The PACIFIC MARINE REVIEW will be continued as the name of the Pacific edition of The LOG. It will carry on the virtues of a regional marine journal on the Pacific Coast, with its staff maintaining close editorial relationship there, and with the largest and finest ABC paid circulation coverage of this region in history.

Mr. Hines will continue to be actively identified with the consolidated journal in the capacity of Associate Publisher. Mr. T. Douglas MacMullen, editor of PACIFIC MARINE REVIEW, will continue in that capacity as editor of the PACIFIC MARINE REVIEW (the Pacific edition of The LOG). Miller Freeman Publications will own and operate the journal, with Mr. Harlan M. Scott as Publisher. All readers of both journals will have their subscriptions extended.

Our negotiations and their conclusion were carried on with the utmost harmony and goodwill; and the staffs and organizations of both journals are united in seeking the best for the consolidated journal. We think that here is an example where all parties are benefited by joining hands—readers, advertisers and the industry.

Miller Freeman

J. S. HINES
Publisher
PACIFIC MARINE REVIEW

MILLER FREEMAN
President
MILLER FREEMAN PUBLICATIONS

Dollar Wins Control Of American President Lines

R. Stanley Dollar

WITH the denial by the U. S. Supreme Court of the petition for a Writ of Certiorari, the case of *R. Stanley Dollar, et. al., vs. Emory S. Land, United States Maritime Commission, et. al* is resolved in favor of Dollar. This result is historic in both maritime and legal annals, and the interests of many people suggest the reprinting of a synopsis of the vital points in the decision.

The appellate court on July 17 ruled in favor of Dollar, and from this ruling the present proceeding in the Supreme Court was in effect an appeal. In the ruling it is explained that by 1937 the Dollar Company was in difficult financial straits. The problems confronting it and the various steps taken to remedy the situation need not be recapitulated here. It is sufficient for purposes of the various questions presented by this case to say that the Commission and respondents entered into a contract in 1938 by which respondents delivered their common stock in Dollar of Delaware, endorsed in blank, to the Commission; and the Commission released some of respondents from certain obligations and agreed to grant Dollar of Delaware an operating subsidy and to make a loan to it and to obtain for it another loan from the Reconstruction Finance Corporation.

The subsidy was granted and the loans were made. By 1943 American President Lines, Ltd., had fully paid all indebtedness due the United States. Respondents thereupon demanded return of their shares of stock from the then members of the Commission, claiming that the shares had only been pledged as collateral for a debt which had been paid. The members of the Commission refused to surrender the shares, claiming that they had not been pledged under the 1938 contract but transferred outright.

Summarizing the issues on the merits the Court said:

"The allegations of the complaint, if proved, would establish that petitioners are unlawfully withholding respondents' property under the claim that it belongs to the United States. That conclusion would follow if either of respondents' contentions were established: (1) that the Commission had no authority to purchase the shares or acquire them outright; or (2) that, even though such authority existed, the 1938 contract resulted not in an outright transfer but in a pledge of the shares.

"Upon the subsequent trial the District Court held that the Commission had power to take absolute title to the stock and that the contract was one of sale rather than of pledge.

"In the case at bar the findings of the trial judge rested entirely upon documentary evidence or undisputed basic facts. We review the case upon that basis.

"The first problem presented to us upon this appeal is whether the Commission had authority to acquire the shares of stock outright by purchase. If it had such authority it had authority to acquire by purchase the stock of any operating ship company and to operate that company.

"The Commission was created by statute and has only such authority as the statute, directly or by necessary implication, confers upon it. It does not contend that the statute specifically or in terms confers the power to acquire and operate a steamship company, and careful reading does not reveal any such provision. The only section to which the Commission points as giving it the authority it claims is:

" 'The Commission may enter into such contracts, upon behalf of the United States, and may make such disbursements as may, in its discretion, be necessary to carry on the activities authorized by this chapter, or to protect, preserve, or improve the collateral held by the Commission to secure indebtedness, in the same manner that a private corporation may contract, within the scope of the authority conferred by its charter. . . . ' "

In its brief the Commission says, "The Commission's substantive powers are those granted it by statute, and its implied powers are those reasonably necessary and appropriate for it to administer its substantive powers, just as a private corporation's implied powers are those reasonably necessary and appropriate for it to carry out the substantive powers and objects provided by its charter.

"The power to own and operate transoceanic steamship lines is a power of tremendous scope. It would involve decisions of vast national importance and the collection and disbursement of vast amounts of public funds. It is inconceivable to us that Congress would have left to implication so vast a power. We do not think that if Congress had intended the Maritime Commission to enter upon such ownership and operations it would have left the matter entirely to a clause which merely authorized the Commission to execute contracts.

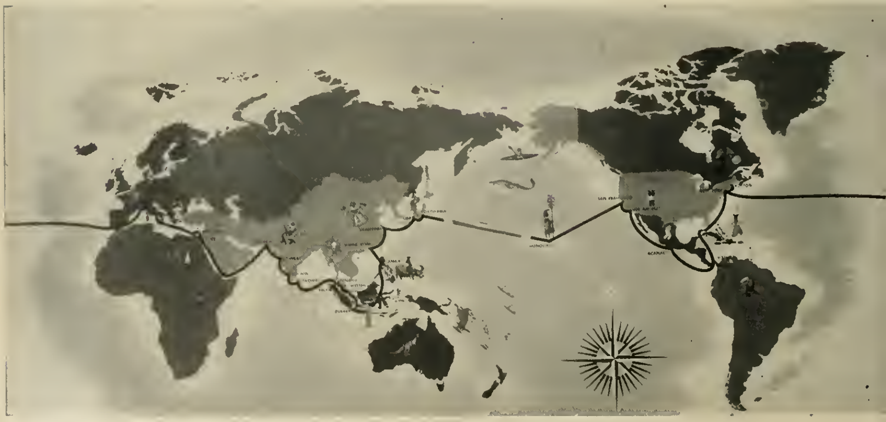
"But the Commission does not say that it has a general power to acquire stock by purchase, apart from its other duties in respect to maritime operations. It says that its power to acquire stock is incident to its power to compromise or settle claims. It can, it says, accept stock in the settlement or compromise of a claim. . . . .

"In July, 1945, Dollar of California received information that the debts of Dollar of Delaware had been paid. Thereupon it and the other plaintiffs in this action made demand for the return of the stock. The Commission refused on the ground that the Adjustment Plan was an outright acquisition rather than a pledge transaction.

"We are of opinion, upon balancing the conflicting considerations that the transfer of the shares under the 1938 contract was a pledge. We are led to this conclusion principally by the weight of two considerations: (1) the general equitable character of the transaction and (2) the action of the Commission, at the time, in issuing the new certificates to itself and not to the United States.

"It seems plain beyond question that if this transfer had occurred between two private individuals no court of equity would have treated the transfer of the shares as other than a pledge. The details of the transactions are exceedingly complicated, but they are summarized simply. Dollar was a debtor in a sum of $7,000,000. At a

(Continued on page 59)



Route of the "President" ships, westward round-the-world via the Panama and Suez Canals, touching Hawaii, Oriental and Middle East ports, Egypt, Europe, and back to the United States.

Quick Reactivation Job At Todd's Los Angeles Yard

TODD Shipyards Corporation recently established another record when it assisted the Pacific Reserve Fleet to accomplish the reactivation of the naval hospital ship, *Haven*, in 17 days at its Los Angeles Division. The vessel was made ready as a replacement for her sister ship, the *Benevolence*, sunk off the Golden Gate at San Francisco on August 25 following a collision.

With time the essence, the C-4 type ship was given top priority for men, materials and services so that the *Haven* would be returned to duty within the briefest possible time for service in the Orient.

An around-the-clock schedule was adopted for the shipyard operations and recommissioning ceremonies were held aboard the vessel. Shipyard activities were directed by the Assistant Industrial Manager's office, Terminal Island, under the direction of the Pacific Reserve Fleet.

The first major job was the removal of all dehumidification machines and their equipment and the restoration of the affected compartments to their original condition.

The main and auxiliary machinery and associated piping were stripped of preservative used during the lay-up before being opened for inspection and subsequent repairs. All piping throughout the ship was subjected to a hydrostatic or air test with new parts and materials added to insure tightness prior to actual operation.

The wooden shelters erected over the lifeboats during inactivation were removed and the lifeboats taken ashore for internal and external examination. Miscellaneous repairs to the metal and wooden hulls were made and all buoyancy and fresh water tanks air tested. Upon completion of cleaning and painting all equipment was restowed as original and lifeboats re-positioned in the davits.

All fire fighting systems were checked for operation and where required, were repaired, recharged or equipped with new materials. The *Haven's* fire hose was removed from storage, subjected to a hydrostatic test and restored at fire stations throughout the vessel.

The air conditioning system with its electrical equipment and ventilation ducts was returned to original service after all blanks installed during inactivation were removed. All stowed ventilation heads and cowls were removed from storage and reinstalled in their proper locations.

The cargo refrigeration system was recharged with freon, tested, and all refrigerated spaces disinfected before any perishable stores were taken aboard. Besides the main boxes, 45 drinking fountains, 35 reach-in refrigeration and 15 miscellaneous units (milk homogenizer, deep freeze, cooling units, etc.,) were inspected, repaired as required and returned to operation.

The cooking equipment, in the main galleys and the various pantries was cleaned of all preservative, checked for any faulty operation and overhauled or renewed as required.

All electrical circuits and motors, as well as the miscellaneous electrical systems throughout the ship, were megger tested, repaired and returned to their original service. The automatic electrical litter hoists on the main deck were reconditioned and tested with loaded litters to in-

"The Haven"

sure proper functioning for use in hoisting casualties aboard from small boats. The re-installation of all electronic equipment was made in accordance with Navy specifications. Upon completion of electrical repairs, all motors and generators were tested under full load operating conditions.

The *Haven* was drydocked and all exterior surfaces from the keel to the boot-topping were sandblasted to bare metal, and then coated with anti-fouling plastics. International Red Cross colors above the water line were repainted to meet the requirements. All outboard blanks on the hull were removed and all sea and overboard discharge valves reconditioned. The underwater appendages were reinspected after removal of preservative material and were reconnected or restored as original.

The vessel was recommissioned September 15 under the direction of Vice-Admiral George D. Murray, USN, Commander of the Western Sea Frontier and of the Pacific Reserve Fleet. Captain J. J. Curley, Jr., Commander, Long Beach Group Pacific Reserve Fleet, directed the ceremonies and delivered the ship to her new skipper, Captain Victor B. Tate, USN. Recommissioning of the *Haven* with extensive industrial assistance, marked the first such performance in Southern California by the Pacific Reserve Fleet since the outbreak of the Korean war. The ceremony and interviews were televised by KTLA-TV, Los Angeles, and was the first time such an event has been telecast.

Orderlies and guides for the commissioning were provided by the Marine Detachment, Long Beach Naval Station, with the honor guard furnished by the U. S. Army from Fort MacArthur, San Pedro, California. Music was furnished by the Long Beach Municipal Band.

The vessel is equipped to handle 800 patients and in an emergency can exceed this capacity. Each patient's bed is equipped with a reading light and a headphone outlet with a five program selection.

Her hospital equipment rivals that of the best hospitals on land and includes operating rooms, laboratories, pharmacy, dispensaries and various types of sick wards. Her storerooms contain medicines and equipment to cope with any type of sickness or injury.

The *Haven* displaces 15,000 tons, has seven decks and a speed of 18 knots. The 520-foot vessel is manned entirely by naval personnel and has a crew of 540 men.

Several sea trial runs were made for conducting underway shakedown training and emergency drills prior to her departure from Los Angeles Harbor.

The *Haven*, originally outfitted by Todd Shipyards Corporation at its Brooklyn Division in 1945, served in the evacuation of prisoners of war from Japan following World War II, and was used during the atomic tests in Bikini in 1946 as a floating laboratory and headquarters for scientific personnel.

Bethlehem Awarded Plan Contract For New C-4

The Bethlehem Steel Company, Inc., Shipbuilding Division, will prepare the bidding and working plans and related data of the new National Defense type fast cargo ship for the Maritime Administration, United States Department of Commerce, Vice Admiral E. L. Cochrane, Maritime Administrator, has announced.

Award of the contract to Bethlehem was made after negotiations with the company were concluded to lower the original bid price, Admiral Cochrane said. The present negotiated price is $1,219,000; the original bid was $1,270,000.

Bids to prepare the plans and data for the new type ship (Design C4-S-1a) were opened on October 11, 1950. Three companies entered bids: Newport News Shipbuilding and Drydock Company, Newport News, Va.; W. C. Nickum & Sons, Seattle, Washington; and the Shipbuilding Division of the Bethlehem Steel Company, New York, N. Y.

The Newport News bid was conditioned upon the award of the construction of one or more vessels, and was ruled as not responsive to the Administration's invitation.

Although entering the lowest of the three bids, W. C. Nickum & Sons was informed that its bid could not be accepted because it does not now have the going organization, nor experience in designing vessels of this size and power, which would enable the firm to complete the project within the short time prescribed.

"Early preparation of the plans and data is essential", Admiral Cochrane said, "in light of the growing defense effort." In a letter to the Company on October 19, Admiral Cochrane added: "This decision in no way reflects upon the personal ability of the members of your firm or on the performance of the work it has undertaken in the past."

The Maritime Administration's bid called for the production of the bidding plans and specifications within 30 days after award of the contract, and for the preparation of working plans and related data within 250 days.

Need for such a vessel has been expressed by Admiral Cochrane on several occasions as an important measure of national defense preparation. The vessels now in the Reserve Fleets are mostly Liberty ships capable of only ten knots. Victory cargo ships, of which 136 were broken out of the fleets for use in the Korean campaign, are in the 15-knot class, Admiral Cochrane said, and there are only some 100 of these still left in reserve.

The National Defense type ship will be a 20-knot vessel, about 525 feet long and more than 12,000 tons deadweight.

Use of Radar By Swedish Ships

Reports on the highly satisfactory use of radar by Swedish ships have been received from the Swedish Chamber of Commerce, and are published in the Proceedings of Merchant Marine Council of the United States Coast Guard. They are quoted here as an item of general interest and do not necessarily represent the views of the United States Coast Guard.

The following is a summarised version of their general observations on the use of radar, which has now been installed in 39 vessels of the Broström Line.

THE apparatus has come up to the owners' expectations generally, and although there have been temporary failures in all sets, the gradual acquisition of knowledge by the officers working them has increased the sets' serviceability as well as their usefulness.

Some of the sets fitted in Broström ships are of the 10 cm. type manufactured by Raytheon; others are 3 cm. R. C. A. and Westinghouse equipments. There is some divergence of opinion as to the comparative usefulness of the two wave lengths, but after some years of experience we have reached the conclusion that 3 cm. radar gives a clearer picture of the nearer surroundings and is therefore particularly useful for navigating rivers and among skerries and for coastwise navigation, while 10 cm. radar is more suitable in a high sea and during heavy squalls of rain, snow, and hail because the radar picture suffers less from the effects of clutter than does that of the other set.

It can be claimed, without exaggeration, that the installations have greatly increased safety in navigation and have also been the means of saving a good deal of ships' time. This gain has, of course, been greatest where fog and haze have been prevalent, particularly in the North Atlantic, North Sea, and Baltic; it has been achieved in the open sea, along the coast and in harbour approaches. Farther afield, too, extensive use has been made of radar — for example, in the Eastern Mediterranean and in Chinese and Japanese waters, where navigation marks and lights are not yet fully restored since the war.

Radar has proved of great value, not only as an anti-collision device, but also as a reliable navigating instrument in making a landfall. Well-defined objects, floating as well as fixed, give correct range and bearing, but flat low-lying coasts and low floating objects at a distance are difficult to trace on the P. P. I.

The effectiveness of radar is particularly dependent on the good judgment of the navigator in all circumstances and on the state of sea and weather. But while much might be written on the efficacy of the device, we will content ourselves with quoting from one of our Shipmasters:

> Navigating without radar in fog or heavy rain, or during darkness close to land where no lights can be seen, can be compared with the plight of a man who has suddenly lost his sight. If it is blowing hard, he may even become deaf. He hears no sound signals and knows nothing of what may be moving about in the near vicinity. Through radar he can, as it were, be given back his power of sight and be enabled to navigate wisely without incurring too great a risk to ship, cargo and crew. Radar is the ship's superhuman eye.

With regard to the question of how often a radar set needs repair or a thorough inspection, this varies as much between individual sets as between differing types so that no general rule can be given. We can say that some of our radar installations have been used without failure up to one thousand hours, while others need considerable repair after a few hundred hours. Generally the trouble has been found to be due to faults in the valves, of which there are some 50 in each set.

In order to ensure maximum efficiency our sets are given a thorough overhaul each time the ships return to Gothenburg, in addition to undergoing any necessary repairs in foreign ports. In this connection we have found that, whereas expert service is obtainable in almost every large port in the world, it is not available in many smaller ports.

Report From the Master of Motorship "Froste"

The *Froste* arrived in Boston on February 22, 1948, and the shipbroker emphasized the absolute necessity for the ship to be loaded at the latest by February 29 for a trip South.

After communicating with New York about the quickest way of discharging at that port, it was agreed to pass through the Cape Cod Canal in order to gain 10 hours; and if possible to start discharging in New York on the morning of the following day. After going through the canal, we encountered dense fog, but with the help of radar we went ahead at full speed for 9 hours, after which the fog lifted. The ship commenced discharging in New York immediately. After discharging in New York on February 25, we proceeded straight to Philadelphia for final discharge. Two hours before reaching the Delaware River we met haze and dense fog. We contacted the pilot boat by radiotelephone and with the help of radar we reached the boat and received the pilot. Thereafter we proceeded at full speed up river, made fast at the allotted berth and commenced discharging without delay. On February 28, when discharging was complete at 5 p.m. and we were ready to return to New York, where we were scheduled to be by the 29th, the visibility was about a ship's length.

Thanks to radar and good cooperation from the pilot we left in good order and proceeded down the whole length of the river at full speed. On arrival at the pilot station we passed 14 ships lying at anchor, held up by fog. The pilot went with the ship to New York as it proved impossible for the pilot boat to find the ship. We reached New York at noon on February 29.

Two other instances worthy of mention took place in December of last year and January of this.

The first was on the occasion of our arrival at Paranagua on December 23, when navigation was endangered by thick haze. The only mark of approach to the bar is a lightbuoy. This was clearly seen on our radar at a distance of four to five miles. After the pilot had boarded, we proceeded the whole way up to Paranagua, navigating solely by radar.

The second instance was when, on leaving Buenos Aires on January 27, we met with a pampero shortly after departure. On account of the hurricane and torrent of rain the ship was very difficult to handle in the narrow passages. The radar set proved to be an invaluable help, for we could see distinctly the buoys in the fairway as well as ships at anchor and those adrift.

Experiences With the Use of Radar in the Ice-Breaker Service

The following is a precis of a report made by Hugo Larsson, civil engineer, on behalf of the Swedish Government about the use of radar in the Swedish ice-breaking service.

Object of the Trials

For the purpose of comparing results with the two wave lengths, 3-cm. and 10-cm., generally used in navigational radar, the Swedish Government has carried out systematic researches and experiments under winter conditions in Swedish waters. Two radar installations, each using one of these wave bands, were placed in the Government-owned ice-breaker *Ymer*, a ship which had to endure most severe trials during the long hard Swedish winter.

Installed in November 1947, the radar equipment was used during the whole ice-breaking campaign from November 28, 1947, to May 12, 1948.

Equipment Used

The radar sets selected for the trials were of American manufacture; both were typical examples of design for the appropriate wave length.

The aerials were installed relatively high up on the foremast, as it is always very important for the ice-breaker service to have a long operational range—to be able to find, for instance, a ship whose position is only approximately known. The 3-cm. radar had a fairly small, light aerial which was fixed 85 feet above the surface of the water and the 10-cm. aerial was fitted a little lower at about 70 feet.

The combined transmitter and receiver units were fixed in a convenient space in the forecastle just forward of the mast, so as to have as short an aerial lead-in as possible. This position imposed considerable strain on the equipment due to vibrations from the diesel engines and the oscillations of the forecastle as the ship forced its way through heavy ice. During the test period no ill-effects were observed as a result of this shaking.

Display units were fitted up in the chart-room so that quick comparisons could be made with the chart. An extra display unit for the 10-cm. set was fixed in the wheel-house so as to be easily accessible from the bridge.

Estimation of Type and Consistency of Ice by Means of Radar Screen Pictures

Flat surfaces of ice, like flat surfaces of water, gave no reflections on the screen; reflections appeared only when the ice surface was broken—the rougher the surface the stronger the reflections. When the motion of the sea broke up the ice it formed blocks with rectangular faces which froze together to form a large number of groups of surfaces mutually at right angles. The result was nothing short of a huge corner reflector assembly. A rugged ice surface of this type always gave very clear reflections up to a distance of 2 to 3 nautical miles. As the individual "reflectors" were of moderate size they were more noticeable with the 3-cm. set than with the 10-cm.; a clearer display was received, with more details, due to the greater power of resolution possessed by the 3-cm. set.

An intelligent use of the gain control, in conjunction with the control normally used for reducing sea clutter effects gave very exact impressions of ice field surface conditions. In this way a channel through firm ice could be distinguished. Even old channels covered by snow and invisible to the naked eye appeared on the screen. Pack ice patches frozen into fixed smooth ice fields appeared on the screen as islands of light on a dark sea. Gradually a direct relationship was noticed between the "reflection factor"; i.e., the light intensity on the radar screen, and the resistance of the ice against the propulsion of the ice breaker. The darker the ice appeared, the greater the speed; the lighter the ice, the lower the speed.

After a little training it was found that the nature and consistency of the ice could be judged with greater accuracy by means of the radar displays. Firm ice could be distinguished from open water by the lack of sea clutter, even with a high gain setting. Ice formations like solid pack ice which were difficult to force could be distinguished from open water by the change in the appearance of the sea clutter, which was constantly being altered by the rotation of the aerial; reflections from ice always recurred at exactly the same points.

Drifting ice floes gvae strong reflections, often at distances up to 3 to 4 nautical miles. Ice walls showed up on the screen as long, straight stretches as did the overhanging edge of ice formed by the actual breakage of the channel.

Navigation and Determination of Position by Means of Radar

Radar made navigation easier not only in darkness and bad visibility but in clear weather. When all floating seamarks had been withdrawn precise calculations of position were made from the radar display. Bearings at known distances from various landmarks were checked and it was found that accuracy to the order of 50 metres on a chart of scale 1:50,000 was obtained. Risk of confusion in the landmarks selected was eliminated by taking bearings and calculating distances from several points in different directions. This process seldom took more than half a minute.

The identification of the radar display with the chart presented no difficulty. The art of reading the radar display without comparison with the chart was soon mastered. Care had to be taken in this matter, for coastal contours might change their appearance through the formation of icebergs or towering blocks of pack-ice, and on long flat beaches ice might be stranded and blend in with the coastal contours. High factory chimneys and other tall objects, water towers and lighthouses, were used to take bearings but some skill in selecting these was needed.

Plotting Positions of Other Ships by Radar

When the ice breaker's position had been determined it was possible to calculate the position of other ships. The course, speed, and direction of the other ships could be ascertained by continual plotting. The movement of any ship after it had been located could thus be followed and a check kept on her position after the breaker had released her from the ice. When navigating in a channel with ice floes drifting about it was often difficult to distinguish between reflections from ice floes and from ships; fishing vessels and pilot cutters were particularly difficult to distinguish. Consequently a vessel with radar equipment is not relieved of the duty of proceeding cautiously and of giving the prescribed signals when visibility is bad.

Superintending Convoys by Means of Radar

For controlling the position of vessels in a convoy the 10-cm. wave length proved more satisfactory than the 3-cm. wave length. The reflections from rough ice favored observations when the ice breaker was following her own course through the ice, but it caused difficulties when using the 3-cm. radar for ships which were nearest in the convoy; sea clutter likewise caused difficulties on open waters. As a rule the 3-cm. radar was adjusted for the best possible ice reflections to facilitate the navigating of the ice breaker itself; the 10-cm. equipment was then adjusted to cause the disappearance of the ice reflections so that ships in the convoy appeared plainly on the dark background.

The use of radar enabled the position of ships in a convoy and the position of one ship in relation to the others to be observed at any given moment. The ice breaker was thus able to adjust its speed to that of the vessel which found most difficulty in maintaining its place in the convoy.

Effects of Falling Snow With 3-cm. and 10-cm. Wave Lengths

Snow storms generally had no more effect than a correspondingly heavy rainfall. Although snow storms were reflected at distances up to 10 nautical miles with 3-cm. radar they seldom caused any trouble to navigation. Only on isolated occasions were the storms heavy and the effects could generally be dissipated by coupling in an F. T. C. circuit. With the 10-cm. equipment snow storms could be observed only on exceptional occasions and they could always be eliminated by using F. T. C.

Effects of Very Low Temperatures, Heavy Rolling, etc.

Low winter temperatures had in themselves no effects on high frequency radiation, yet it is essential that apparatus to be used in winter should be able to withstand extreme cold. At temperatures below —20° C. it was found that there was difficulty in rotating the antenna of the one set; the other was able to tolerate the lowest recorded temperature, —32° C., without any trouble.

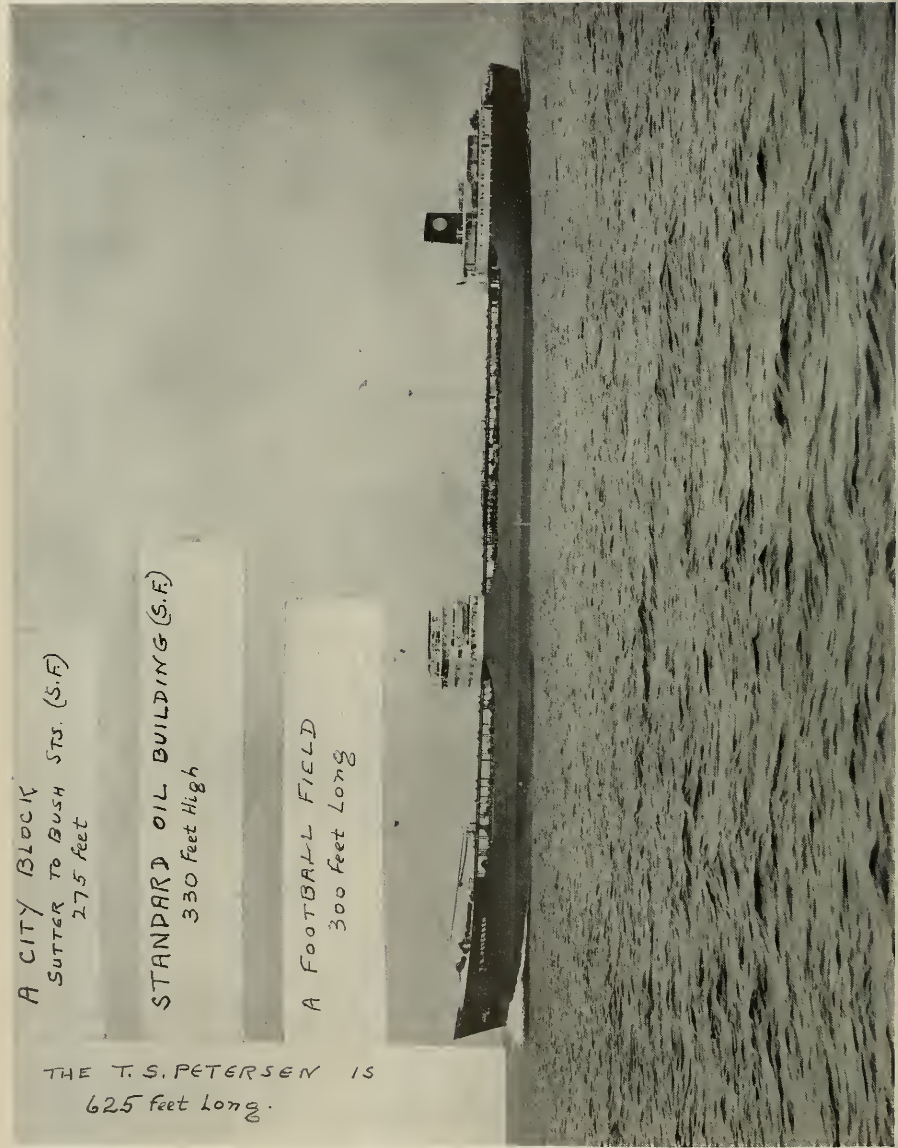
Mechanical stability was satisfactory in both installations. Neither the violent shaking and vibration often encountered with proceeding through heavy ice nor rollers causing a list of 45° had any effect on the efficiency of the apparatus.

Conclusions

Radar is perhaps of greater assistance to ice breakers than to any other ships in civilian service. It can also help ships constructed for ice service and can often enable them to dispense with the services of an ice breaker. For vessels plying in open water a 10-cm. set would seem more useful in view of the limitations which strong sea-clutter imposes on the use of a 3-cm. set. For winter service the latter is better for estimating the character of ice conditions and this outweighs the disadvantage of sea-clutter reflections. On ice breakers a set of each type is recommended, the 3-cm. for ice navigation, the 10-cm. for calculating position and controlling a convoy. With the two installations one can relieve the other and a constant radar watch be maintained.

The results given were achieved during a Northern winter when visibility is usually bad; floating navigational marks, buoys and lightships were often frozen in or shifted from their proper locations. It was therefore of inestimable value to be able to take precise bearings, like those which were computed from radar echoes, to

(Continued on page 85)


A CITY BLOCK
SUTTER TO BUSH STS. (S.F.)
275 feet
STANDARD OIL BUILDING (S.F.)
330 Feet High
A FOOTBALL FIELD
300 Feet Long
THE T. S. PETERSEN IS
625 Feet Long.

First Marine Installation of General Electric DP Turbines Made on New Tankers

CERTAIN features of the giant tankers in the construction program now nearing completion will be published from time to time. Inboard arrangements were pictured in the September Pacific Marine Review, and elsewhere in this edition there is a discussion of safety problems on board ship.

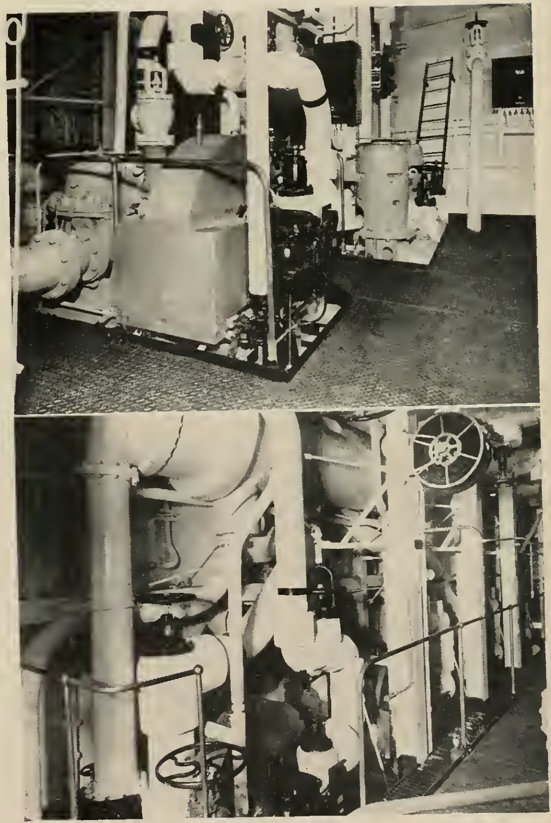
Installation of eight General Electric DP mechanical-drive turbines on each of five new tankers marks the first marine use of these standardized turbines. The 28,000 ton Standard Oil Company of California tankers, of which the S/S *T. S. Peterson* is the first completed ship, are being built at the Sparrows Point, Md., Yard of Bethlehem Steel.

The turbines are used for three different applications. Four 500-hp single-stage turbines will be used on each ship to power the cargo pumps. The 5000/1750 rpm units operate under steam conditions of 550 psig, inlet pressure and 4 psig exhaust. Temperature conditions are 550 F, total temperature.

Three 226-hp, 4460 rpm units power the main boiler feed pumps. Inlet pressure is 545 psig, exhaust pressure 20 psig under temperature conditions of 505 F, total temperature.

One G-E unit will power the fire pumps and Butterworth system. This 94-hp DP runs at 3000 rpm under identical steam and temperature conditions as the main boiler feed pumps.

◀ The tanker T. S. Peterson, with diagram showing its relative size.



Top: 94-HP steam turbine, type DP installed on the S. S. "T. S. Peterson". Bottom: Turbine and gears leading to 500-HP cargo pumps of S. S. "T. S. Peterson".

Safety Aboard Tankers

By J. D. ROGERS
Vice-President
Esso Shipping Company

THE great size and high speed of many of the vessels that have been added to the world's tanker fleets during the past few years have served to emphasize the need for increased attention by management to safety on tankers. A high degree of vigilance on the part of operating personnel afloat and ashore is essential to insure the preservation of life and property. Teamwork within the operating groups and between these groups and management is an important requisite in successful safety work. Cooperation of this nature requires a great deal of time and attention to detail but results are sure to make such efforts worthwhile.

Conditions at sea brought about by the action of wind and sea create added hazards not encountered on shore. An unsteady deck is such a hazard and is one that is often accentuated by storms and bad visibility. When tankers carry inflammable cargoes, the fire hazard is perhaps the greatest threat to the ship and its crew. All these factors point up the special need for a safety program for seagoing tank vessels.

The primary requirement for any successful safety program is genuine interest on the part of top management. Without the cooperation and interest in the activities of the Safety Group on the part of management, the best planned program will not meet with complete success. The delegation of responsibility for safety work to one person or one group also is essential if maximum benefit is to be obtained. Enthusiasm for the job is a quality eminently to be desired in those to whom responsibility for safety work is delegated.

Shortly after the end of World War II, my company, as an owner of a large fleet of ocean going tankers, decided to designate a member of our seagoing engineering staff as a safety engineer. This man devotes his entire time to safety on tankers. In addition to following up safety methods, procedures and practices, the safety engineer regularly inspects all vessels and prepares reports covering any condition he considers unsafe. Each report is forwarded to the Master of the vessel and a follow-up is maintained until confirmation is received that the unsafe condition has been corrected.

Safety aboard ship may be divided into two broad categories—vessel safety and personnel safety. Further discussion will be based on these two points.

Vessel Safety

Three of the principal types of vessel accidents are collisions, groundings and fires or explosions. No attempt will be made to discuss in detail the first and second types of accidents except to refer to the navigational equipment with which the vessels of a representative tanker fleet have been equipped.

The gyro compass, radio direction finder, depth finding installation and radar are the principal present-day aids to safe overseas navigation. The gyro compass, depth finding equipment and radio direction finder have been available for many years. Since the end of World War II, radar has been developed rapidly and has, to a very great extent, attained the status of standard equipment aboard tankers.

Although fires and explosions occur infrequently, they represent the most serious hazard in tanker operation. The possibility of loss of life and damage to property when a fire or an explosion occurs is undoubtedly greater than in any other type of accident. After the last war, discussions were held with the Navy Department in Washington regarding their experiences in fighting fires aboard combat vessels. The Navy very cooperatively supplied information regarding a number of new devices which had been developed during the war and were found to be very effective in extinguishing shipboard fires. As a result of this conference, the following program was initiated by Esso Shipping Company:

1. Improved fire-fighting equipment including fog nozzles and improved foam handling equipment was placed aboard all of the company's vessels.
2. Through the courtesy of the Navy, licensed officers were sent to the Navy's Fire-Fighting School in Philadelphia to receive training in the proper use of the improved fire-fighting equipment.

Machinery spaces on tankers are protected by fixed CO_2 or steam smothering systems. The following tabulation sets forth the additional specialized firefighting equipment which has been placed aboard those tankers,

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*This article was presented before the Annual Meetings of Marine Section, National Safety Council, October 17, 18, 19, 1950, at Morrison Hotel, Chicago.

on the basis of the information released by our Naval authorities.

26,800 Ton Super Tankers

4—2½″ and 13—1½″ all purpose nozzles
3—2½″ marine strainers
3—12 ft. and 4—4 ft. low velocity fog applicators
4—2½″ and 3—1½″ fog foam nozzles

On this type of tanker a liquid foam tank having a capacity of 750 gallons is installed in an engine room compartment above the boilers and connected through a fixed piping system to the fire pumps and main fire line by means of which foam can be delivered to any part of the vessel.

T-2 Type Tankers

4—2½″ and 14—1½″ all purpose nozzles
4—2½″ marine strainers
3—12 ft. and 3—4 ft. low velocity fog applicators
2—1½″ mechanical foam nozzles with pick-up tubes
20—5 gal. cans of mechanical foam solution

Other classes of tankers of this fleet are supplied with substantially the same fire-fighting equipment as that listed for the T-2 class.

When installing new fire-fighting equipment such as that listed above, it is important, particularly on the war built tankers, that all fittings be inspected. It was found that on a number of vessels some of the hydrants had New York Fire Department hose threads while others had National Standard hose threads. The latter were ultimately selected as standard on our tankers. Inspection by the safety engineer after the equipment is placed aboard is advisable to insure that it is properly installed and that the crews are familiar with its operation.

On all vessels the 2½″ all purpose nozzles and the 12 ft. low velocity fog applicators are placed at fire stations on weather decks near the forecastle head and the midships and afterhouses. Since smaller fire hose and shorter applicators are easier to handle in confined spaces, the 1½″ all purpose nozzles are located at fire stations in the quarters and machinery spaces and the 4 ft. low velocity fog applicators are placed in the machinery spaces.

On the super tankers equipped with fixed foam systems, the fog foam nozzles are placed at the forecastle head, midship house, forward end of the afterhouse and in the engine room. As T2s and many other types of tankers are not equipped with the fixed foam system, one foam nozzle, pick-up tube and five cans of foam are located midships and another such combination is placed aft. Ten additional cans of foam are stored in accessible store rooms. These portable foam producing units are readily available at all times for use on deck or in quarters.

Twenty-five portable 15 lb. CO_2 or 2½ gal. foam extinguishers also are placed aboard each tanker in this fleet and are located in various parts of each vessel where fires are most likely to occur. Portable extinguishers are supplied in excess of legal requirements to provide officers and crewmen with readily available means of extinguishing fires with the least loss of time and thus prevent a fire from becoming serious.

To assist in the training of ships' personnel in the selection of the equipment best suited to meet a given situation, we prepared a safety circular letter regarding various types of fires such as fire after a pumproom explosion, fire in a cargo tank which has not been ruptured and fire in a cargo tank which has been ruptured. Means which might be effectively employed in each instance to extinguish the fire are outlined in this Circular.

As part of a safety program, the adoption of a plan to send all licensed officers to the fire-fighting school conducted by the Navy at Philadelphia Naval Shipyard cannot be too highly recommended. When a safety Engineer is employed, it is desirable that he be afforded the opportunity of taking the six weeks' course at the fire-fighting school to fit him as instructor and coordinator in the training of personnel.

The usual period of training for officer personnel is one week. The course includes a study of the chemistry of fire, the use of modern fire-fighting equipment and actual practice in fighting fires of different types. The value of this course lies in the fact that it not only makes an officer familiar with the proper use of the new equipment but gives him confidence that fires can be extinguished if the proper methods are used. Officers who have taken this training place special emphasis on the last mentioned benefit and state that the knowledge gained does much to overcome the inherent fear of an oil fire.

While the fire-fighting school is engaged primarily in training Naval personnel, its facilities are being made available to citizens of the United States who serve in the merchant marine and to members of the municipal fire departments in this country. A number of American shipping companies have sent some of their seagoing personnel to the Navy Fire-Fighting School and virtually all of the officers serving on Esso Shipping Company's tankers have taken this training.

Certain cargoes carried in bulk on tankers call for additional safeguards to be installed in the cargo handling system to minimize specific hazards. Tank vessels transporting liquified petroleum gas in bulk, carry this cargo in pressure vessels usually built into the regular cargo tanks and extending through the weather deck. To minimize the hazard which would be created in the event of failure of the cargo handling system, remote controlled quick closing valves are installed at the tank outlets. These valves can be operated from any one of several stations on the vessel in case of emergency. Vessels in this service in one fleet, in addition to the regular fire-fighting equipment, are also supplied with dry chemical portable fire extinguishers which are considered very effective in fighting this type of fire.

Some companies which operate vessels transporting Grade "A" products (over 14# Reid Vapor Pressure)

(Continued on page 79)

The Klaveness Line

ONE of the oldest and largest of the Norwegian shipowning companies, yet one of the most modern and progressive in the world, the Klaveness Line traces its origin back to Thor Klaveness (1767-1854), who built his first vessel, the *Hedevig Amalia,* in his own yard in 1800. He was followed by his son Aake Toreson Klaveness (1801-1853). And Aake's son, A. F. Klaveness (1839-1904) went to sea as a youth, finally becoming captain of the *Ornen,* built in 1855. He left the sea in 1869 to take charge of his father's fleet at Sverdstad, near Sandefjord, Norway. He owned fifteen sailing ships in 1880, and was interested also in whaling.

The firm of A. F. Klaveness & Company A/S was formed by the family in 1898. By World War I it had built twenty-four steamships and also operated a number of sailing vessels—the entire fleet aggregating 88,680 tons. The major part of this tonnage was lost in the first World War, but by 1939 the company again owned twenty-four vessels, of a combined tonnage of 221,875 deadweight tons.

Thirteen ships of 105,500 tons were lost by the company in World War II. These losses and the sale of old tonnage left the Line with only nine vessels of 90,000

Home office of A. F. Klaveness & Company A/S, Lysaker, Norway.

A. F. Klaveness

tons in 1945, when the new building program was begun. The delivery of the tanker *Sommerstad* brought the fleet up to twenty-two vessels, aggregating 220,000 tons. All units are of diesel propulsion.

On the Board of Directors of the Klaveness Line are A. Fredrik Klaveness, Jr., A. F. Klaveness, Dag Klaveness, and Chr. Blom. The company has pioneered in good crew accommodations, having introduced the one-man cabin for sailors, smoking rooms for crew as well as for officers, and other comforts. Practically all captains in the company have been with the Line from the rate of deck boy, and many third and fourth generation seamen are with the Line.

A. F. Klaveness & Company A/S tankers have names ending in "stad" honoring the family home at Sverdstad. The liners have the ending "ville" on their names, many of them named after American cities visited by members of the Klaveness family, such as *Bronxville, Pleasantville* and *Belleville.* Others have American derivations for their names. The *Bonneville* was named after the Bonneville Dam and the *Francisville* was named in honor of San Francisco. The *Roseville* was named after Portland, Ore., known as the City of Roses, and the *Bougainville* honors the American fleet in the battle of Bougainville in World War II. Both the endings "stad" and "ville" mean city.

Chr. Blom

A. Fredrik
Klaveness, Jr.

Dag Klaveness

A factor too often overlooked in steamship operation but one which contributes substantially to the popularity and success of any company is regularity and dependability of service. The Klaveness Line is noted for these factors, and arrivals or departures published as much as a year in advance have been met with exactness. The rounding out of the fleet has contributed to this regularity of service, and the perfect coordination between the widely separated offices of the company and their personnel make for a smooth, efficient operating system.

The six liner routes on which Klaveness Line ships operate are: Klaveness Line Pacific Coast Far East service; Fern Line Gulf Far East service; Fern Line East Coast Mediterranean service; Barber West African Line; Barber Line East Coast-Far East service; and Barber Fern Line Orient Atlantic via Suez service.

Top: The "Hedevig Amalia" built in 1800.

Center: The "Ornen" built in 1855.

Bottom: The "Hafrsfjord" built in 1905.

The "Solstad" built in 1899.

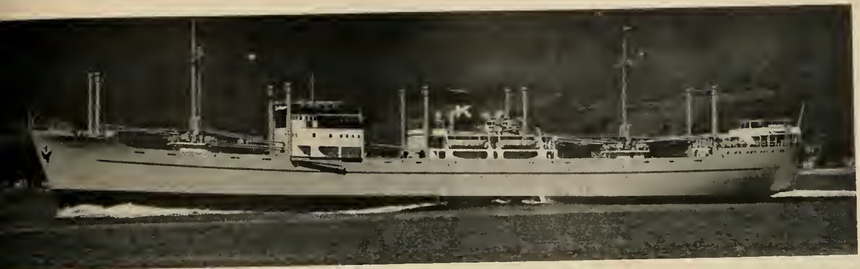
Now on the run from the Persian Gulf to the River Plate is the *Sommerstad*, the last of fifteen ships built by the Klaveness Line under its $36,000,000 post-war reconstruction program. The 16,320-deadweight-ton vessel is on a five-year time charter to Anglo-Iranian Oil Company of London. Built in Amsterdam by the Netherlands Dock and Shipbuilding Company, the *Sommerstad* is 521 ft. long, and has 5,500-HP engines which will drive her at a speed of 14½ knots. She is equipped with radar, gyro compass and gyro pilot, and is noted for having single cabins for her entire crew. The *Sommerstad* brings to four the tanker fleet owned by A. F. Klaveness & Company.

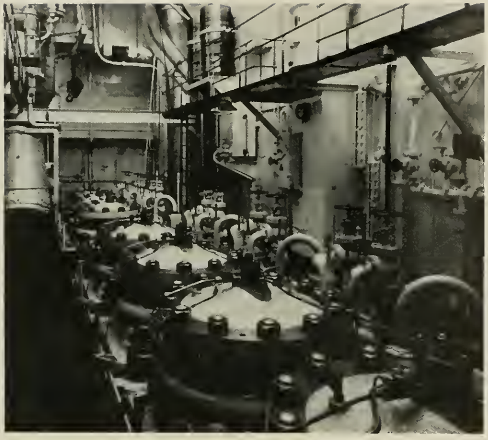
Top: The M.S. "Glenville" shown on her trial trip at Glasgow, Scotland, on June 19, 1950, when she attained a speed of 19 knots. She is a usual Klaveness type liner vessel built by Lithgow's Yard at Glasgow. The "Glenville" is 442 ft. x 59 ft. x 39 ft. 6 in. with a deadweight of 8700 tons, powered by a 9,400 HP Stork engine. She is mechanically ventilated and has six various sized deep tanks which are coiled for carriage of vegetable oils. The vessel is also equipped with a special tank to carry 120 tons of latex. Her navigational equipment consists of all modern apparatus such as radar, gyro compass with automatic helmsman, SAL log, echo sounding, automatic fire extinguishing apparatus and the latest in wireless and radio direction equipment.

Center: "The Solestad", built in 1948.

Bottom: The "Castleville" on her trial run. ▶

Below: The "Corneville", built in 1930, torpedoed in 1942.



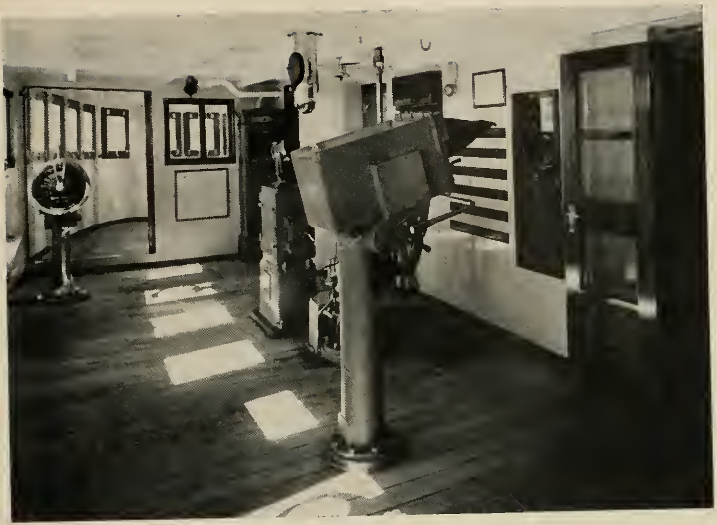


View of "Sunnyville" engine room.

Klaveness' "Sunnyville"

One of A Beautiful Line of Ships

The M/S "Sunnyville" is a diesel motor vessel 462 feet long, 59 foot beam and 39 foot depth with a total deadweight of 9000 tons and 530,000 cubic feet bale capacity. She operates at a speed of 16 knots. Refrigerator capacity is 10,000 cubic feet for chilled cargo and all tween decks are fitted with forced ventilation for handling fruit, vegetables and other perishable commodities. Deep tanks fitted for all types of bulk oils consist of two tanks of 575 long tons each, two tanks of 425 long tons each, two tanks of 275 long tons each and two tanks of 75 tons each. A tank in the forepeak is especially fitted to carry 115 long tons of bulk latex. Finely appointed accommodations are provided for 12 passengers in double and single cabins, each with a private bath. The public rooms are tastefully furnished and comfortably equipped.



The "Sunnyville" modern bridge, showing automatic steering, radar, automatic depth sounder, S. A. L.-Log, automatic fire extinguisher, and Gyro repeater.

The "Sunnyville" smoking room. The staterooms include four single and four double, each with private bath.

Roped and Tied!

Big Fender Job at Bethlehem

THE San Francisco Yard of Bethlehem Pacific Coas Steel Corporation, Shipbuilding Division, has jus completed what is believed to be the largest tug fende job ever performed by a private shipyard on the Pacifi Coast. This involved making 20 side fenders, 4 bow fenders and 2 stern fenders for two navy YTB tugs, the

Top: Making up, or serving, the stern fender. This is 48 feet lon and when completed will have a diameter of 24 inches. A specia machine turns the wire rope core of the fender while the manil rope is built up to the desired diameter.

Center: Some idea of the length of a stern fender is shown i this photograph. Here the fender is being hitched with 2½ manila.

◀

Bottom: Here a 16-foot upper bow fender is shown in the layin up stage. This is oval in cross-section—24" on the horizontal, an 34" on the vertical. Scrap manila rope is used ranging in cir cumference from 2" to 12".

A bow fender has already been parcelled with canvas and work men are now hitching it with 3" manila rope.

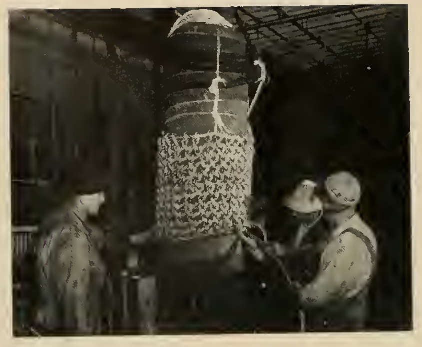
elaka and the *Sassacus.* These two tugs were among ix recently reactivated by the yard.

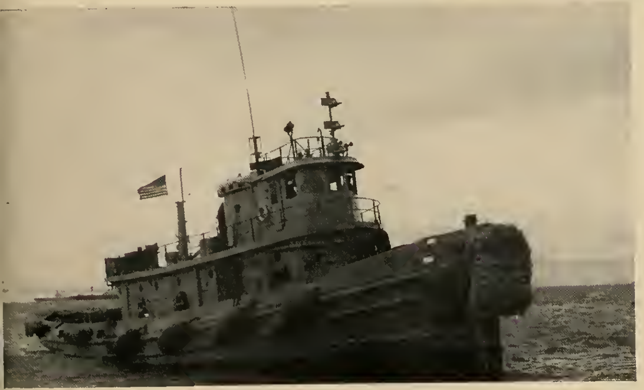
The fenders were built up with approximately 19,000 bs. of scrap rope in varying sizes over a wire rope enter, then covered, or parcelled, with canvas, following which they were hitched with more than four miles f new manila rope ranging in circumference from ½" to 5".

Almost 1000 feet of Bethlehem improved plow steel vire rope, ranging in size from ½" to 1", was used for he fender centers.

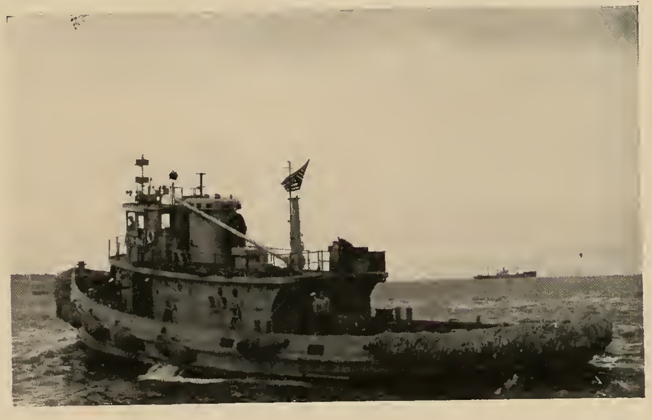
This unusual job was performed by the yard's rigging lepartment and sail loft.

Right: Hitching a side fender with 2½" manila rope. (Rope is measured by circumference.)

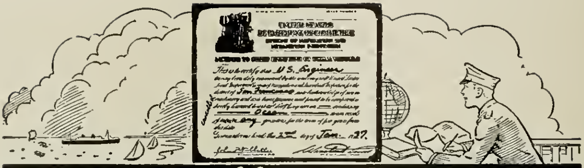




This quartering shot off starboard bow of tug shows side and bow fenders in place. The mat over the bow fenders is called a thrum. This is made from woven rope which is shredded or "whiskered".



This quartering shot ofl the port stern of the tug shows installation of the stern fender and the side fenders. "Whiskered" mat is conspicious.



Your Problems Answered

by "The Chief"

"The Chief's" department welcomes questions—Just write "The Chief," Pacific Marine Review.

Gas Turbines

It was 1000 Sunday morning, the announced time for the regular seminars held in the office of Frank Farran, the Chief Engineer. The Marine Reviewer was rolling deep, heavily laden with military cargo on Government manifests bound for Pacific waters. The office was crowded with men sitting on the transom, the table, the log desk and the extra chairs brought in from the day room.

Frank Farran entered from his stateroom, remarking that the subject of gas turbines might not be of much interest to some of them although the day might come when they would have to run "these screeming banshies". "Anyhow", he said, "it will do us all good to look at another engine. For it is an engine and no mistake about it. The whole power plant may some day be the size of the exhaust trunk on our main turbines. So let's see."

And to McCoy, the First Assistant, "Well, Mac, shall we carry this along on the question-answer method or will you take it as it comes in lecture form?"

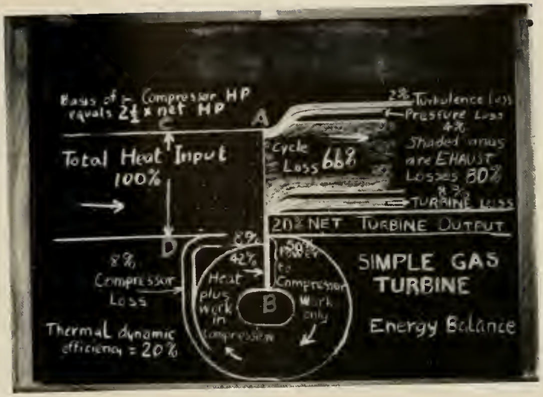
"We don't know enough about the subject to ask questions so start talking. But it had better be good." Mac looked around at his fellows for confirmation. There were no objections so Frank began.

"It all started back about the turn of the century when a young chap by the name of Sam Moss, a senior at the University of California, wrote for his thesis on the subject of the compression of air, or gases, by the centrifugal method like the fire pump and bilge pump, whirling the medium around in a casing, building up pressure by converting the generated velocity. He found that it was easy to do if we just got enough velocity. Where 1000 or 2000 revolutions per minute were enough for liquids and were common in those days, for air he needed 10 times that much and the problem was partly mechanical in getting an impeller that would stand 10 or 20 thousand rpm; also a drive to spin it that fast.

"He found work at the great Lynn works of the General Electric Company and soon had a line of air compressors at 6 to 12 lbs. per sq. in. capable of large volume for blowing blast furnaces. In the late twenties he had a 17000 rpm impeller perhaps a foot in diameter for supercharging aircraft engines which otherwise lost half their power at high altitudes.

"These gasoline engine superchargers had to grow up with the engines which soon were 1500 HP and required 300 to 400 HP to run the supercharger to maintain full 15 psi (pounds per square inch) absolute pressure on the carburetor manifold. This was too much HP to manage on a gear connection to the shaft of the engine. So Moss and his associates figured to drive the high speed air compressor by a high speed gas turbine run from the exhaust gases of the engine. Thousands of these were built under great secrecy during World War II and helped to put the great Air Force bombers like the B17 high over the tops of the best German anti-aircraft fire.

"Experiments and research to find metals to stand the red hot temperature of the exhaust had been started years before in the effort to raise the temperature of the steam superheat in shore side and marine steam plants. They were then well in the 750 to 900 degrees F. But the gas temperatures were in the neighborhood of 1100 and 1200 deg. F. They managed to keep the wheel cool enough by blowing cold air at a great rate on the wheel. They took all the pressure drop in one stage (15 down to 0 gage) and lowered the gas temperature there one or two hundred degrees. The stationary nozzles had only the static and pressure forces on them and could stand the higher temperature. The buckets on the 22 inch wheel at 17000 rpm had terrific centrifugal force on them. They were made largely of steel with lots of chromium nickel and cobalt. The metal would run a bright red heat and still stand a tensile strength of 9000 to 12000 psi. The centrifugal action was so high that the forces were up to 70,000 G. This means 70,000 times the force of gravity. A one pound weight on the rim of the wheel would pull to get away with a force of 70,000 pounds.



"Of couse, these superchargers are now a very usual thing. All aircraft use them, sometimes two of them in series. They are used on diesel engine locomotives, submarines and many ships. Whenever you hear a high pitched whistle from an internal combustion engine it has a gas turbine-driven supercharger.

"Engineers soon learned to pump up higher pressures by the centrifugal process until 60 to 90 psi were obtained. Currently pressures to 125 and 150 psi are being obtained. This does not sound so unusual until the tremendous volume of air compressed is considered. The compression is done at a high efficiency, about 85 to 87 per cent. This is expressed on a thermodynamic basis in which the machine is charged with the energy input and credited with energy equivalent of the air under pressure, plus the heat content equivalent, down to the inlet temperature. In other words the performance is compared to the perfect Carnot engine. A perfect compressor, if driven by a perfect engine, would furnish all the compressed air the engine needed to drive the compressor and exhaust the air at the original air inlet temperature. No fuel would be needed. The imperfect engine of course loses heat at the high temperature areas and also loses air by leakage past the packing and close clearance parts so the engine would exhaust the air at a lower temperature and not as much air as was compressed. If fuel can be burned in the hot compressed air to add the amounts lost, and the compressor designed oversize to supply the air loss, it would be possible to supply the engine with hot gas under pressure to run it and to drive the compressor with the engine, the whole system being a gas turbine. Supplying much more fuel it would be possible to cause the turbine to supply an outside or net out-put load."

McCoy interrupted. "You mean to tell us that we can take a vacuum cleaner connected to blow and discharge it into an enclosed 15 gallon can in which a plumber's blow torch is mounted and then discharge the air in the can to another No. 2 vacuum cleaner which will run as a gas turbine and finally belt the No. 2 vacuum cleaner to the first, light off the torch, get her spinning and pull the electric plug from the bulkhead and she keeps running? That would be lifting yourself by your boot straps. Perpetual motion maybe."

Farran answered, "Yes, Mac, that is about it. That is the principle, leaving out only the details, but these are the factors which have kept the gas turbine back until now, the middle of the 20th century. It was conceived at the time of the steam engine and in theory long before. The prime limiting factor is the high efficiency needed in the compressor and turbine which has been attainable only in the last ten years. The other factor holding back developments has been the very high temperature of the gases through the turbine. Another interesting but not limiting factor is the tremendous amount of power to be handled between the engine and compressor as compared to the net out-put. Even today we consider we are doing all right if the net power is one fifth of the size of the compressor-engine combination. Thus to get 1000 HP net output we need a 3500 HP turbine leaving 2500 HP available to drive the compressor. So a 1000 HP gas turbine has the size of two 2500 HP units. But of course it has no boiler or auxiliaries."

Frank turned to the blackboard sketch which had obviously been prepared beforehand. (See Figure.) "Here is a diagram that may be new to you because it is intended to show only the heat and energy conversions and is not a sketch of any physical arrangement. It is a sort of a diagrammatic bookkeeping picture. Vertical distance is the only part that has significance. For instance, the vertical distance between A and B on the sketch represents 150 expressed in per cent of the total heat input from the fuel. The heat from the fuel is presumed to

(Continued on page 67)

With the Port Engineers

At the November meeting in San Francisco, where the large attendance was composed almost entirely of active port engineers, the subject of metallizing was thoroughly explored. Betram Smith and Fred Slater of the Metallizing Engineering Company told the history of the Process and the "how" of the building up of important metal parts by spraying on additional metals of various qualities. Slides were used to explain the process.

Announcement was made by Committee Chairman Jack Butler that the proposed dinner-dance of the society would be held in the Spring rather than during the pre-holiday season and it was also announced that the election of officers would take place in January. Named by the Nominating Commitee are: for president, Louis Dettman of Sudden and Christenson; for vice-president, Ray Sample of Matson; for secretary, George Duncan of MSTS; for treasurer, Joe Ures of Crane Packing Company; for member of board of governors, retiring President Ira Chapman of APL. Also for governors, retiring Secretary George Harlan of MSTS, W. B. Hill of Babcock and Wilcox, Dick Parkin of Westinghouse and Phil Thearle of Todd Drydock.

The Metallizing Process

Metallizing is the spraying of metals of a wide variety of types upon worn or corroded surfaces or into forms for the shaping of new parts, thereby providing quick restoration to use of damaged metal materials. After the bulk has been built up by spraying, machining operations can bring it to the proper size or shape. There is practically no limit, up or down, to the size of the part that

(Continued on page 59)

Future Meetings Of San Francisco Society

The December meeting of the San Francisco Society of Port Engineers, to be held on December 6, will be devoted to chemicals used on board ship. The speaker will be John Parkhurst, service representative of the Magnus Chemical Company of which the Jaxon Engineering Specialties Company is marine distributor. Alex Johnston of the latter company arranged the meeting with program chairman Marshall Garlinger.

The January meeting will be held on January 3 and the speaker will be Naval Architect Morris Guralnick, who will discuss and show moving pictures on the subject of the stability of commercial vessels with particular recognition of the interests of Port Engineers in such a subject.

At the Port Engineers' Meeting November 1. Left to right: Bertram Smith, Ira Chapman, Marshall Garlinger (How did he get in again?) and Fred Slater. Smith and Slater are manager and engineer respectively of Metallizing Engineering Co. Chapman is president of the Society and Garlinger is chairman of the Board of Governors (and president of the Refrigeration Engineers, for whose annual meeting in the south he departed following this meeting).

Three Years of Progress West Coast Maritime Labor Relations

By FRANK L. DWINNELL

THE association of any man and his employer is a partnership of necessity and convenience. This association may be amicable and filled with trust and respect or it may revert to one of suspicion and distrust. Obviously the first, from purely a practical side, is destined to be the successful one while the second will in time destroy the association. Since this is true why is it that in so many cases the second course is followed rather than the first?

To begin with, in all forms of business where there is a close association between the parties, human relations are very seldom a problem. It is mainly a problem in large industry with increasing seriousness in direct proportion to the size of the industry and the proximity between the head office and the farthest removed point of employment.

Of necessity the nature of our maritime industry places the employee thousands of miles from his employer and working conditions at their best, due to the confinement of a vessel, lead the unoccupied minds of many employees into suspicion and distrust. For on the one hand. the employee has the long and violent history of seagoing personnel in their fight for recognition and better living conditions, and paralleling this, especially on the West Coast, has been a 16 year period of constant, unrelenting warfare between the parties, during which this ridiculous situation was regularly created: After a presumed settlement of either major or minor differences the company turns over to this crew some six million dollars represented by the ship and its cargo and in effect says, "Now fellows take good care of our ship and cargo." This is one gamble in which the odds are too great to expect to win.

With rare exception, no part of our industry has been free of blame. Especially on the West Coast was this situation apparent and therefore overdue for correction, for we have realized that our actions did do what no foreign power in the history of our nation has done, successfully blockaded our harbors.

Immediately after the war there was a general trend toward a better understanding. The unions were, with a few exceptions, turning to right wing leadership of a very high type. There were new faces in management and new companies who had no desire to inherit the ill will which had accumulated in the past decade. Unfortunately this element of good was not able to overcame the element of evil in time to avert the strike in the Fall of 1948, which incidentally was the most useless and unnecessary strike which had ever occurred.

However, when settlement was reached there was definite intent on both sides to prevent again a disruption of our industry and the following steps were taken:

1. Long term contracts were written.
2. Agreements were reached tentatively on social security measures which are gradually being placed into effect.
3. During the intervening 2 year period slowly but surely a feeling of mutual respect and understanding has arisen and grown stronger between the parties.

The Stanford University Report, in listing the ills of our maritime industry, placed a large part of the blame on improperly handled Labor-Management relations and, incidentally, did not place the majority of blame on labor. In our own observation some of the major causes of labor disturbances are:

1. Improperly written contracts, which lead to difficult and improper interpretation.
2. Chiseling on both sides after a contract has been entered into.
3. Failure on the part of management to seek or employ proper labor advisors.
4. Last but not least, improper and insincere policy at the top, on both sides, which must certainly assert itself down through the entire organization.

Labor relations are not confined in the office of the industrial relations counsel. That office merely implements the corporate policy and is available for advice, but labor relations become the day-to-day contracts between those in so-called authority ashore and those who are employed aboard the ships.

Man likes to be creative. He likes to feel that his work is appreciated and he most definitely wants to be more than just a number on the payroll. We have found this true on board our vessels when passing out a small but sincere compliment on the appearance of the vessel to one of the men in the engine room, or on deck, or in the stewards' department. After all, these are the men who actually kept it clean, and furthermore it is wise when passing these compliments to do so in front of the man's shipmates. On the other hand, if a reprimand is necessary

(Continued on page 83)

Pacific WORLD TRADE

Reg. U. S. Pat. Off.

Pacific Port Charges Absorbed

By WALTER A. ROHDE

Manager, Transportation Department
San Francisco Chamber of Commerce

FULL absorption of port charges at Pacific Coast ports on transpacific export and import traffic originating or terminating in transcontinental territory became an established fact on November 6th, when tariff supplements became effective which provide that charges for switching, wharfage and car unloading or loading will be included in the line haul rates published in Transcontinental Export Tariff No. 29-I and Import Tariff No. 30-G. This arrangement is not applicable on traffic to and from the Hawaiian Islands as to which the present partial absorptions will be continued in effect. It will also not apply on traffic requiring off-dock unloading, except unboxed automobiles. For such off-dock traffic, special service charges are provided.

Simply stated, this means that an exporter or importer located in the territory generally east of the Rocky Mountains now has to concern himself with only two rates—the rail rate between the Pacific Coast port and his plant or warehouse, and the ocean rate. There will no longer be any accessorial or nuisance charges at the ports such as have confronted him for several years past, often to his surprise and annoyance, and sometimes weeks after the shipment moved.

There is no doubt that many midwestern shippers after such experience decided to forsake Pacific Coast ports and to route their transpacific export and import shipments via Atlantic and Gulf ports where accessorial services were either not encountered at all, or if encountered, were small in amount and well known, so that the shippers generally knew exactly how much it would cost them to move their shipments through those ports.

Were Pacific Coast ports always at a disadvantage in that respect? The answer is no. When life was simple and when wharfage, switching and car loading charges were little more than one third of the volume they reached in recent years, the transcontinental railroads did not find it too difficult to absorb the switching and the car loading charges, plus half of the wharfage, and the steamer lines had no qualms about assuming the balance of the latter charge. But about a decade ago the railroads found the rising cost of these absorptions cutting too deeply into their net revenues, particularly on shipments moving through the Ogden and Salt Lake City gateways where the gross revenue had to be shared with their connections. Consequently, they first attempted to apply an arbitrary charge of 5c per 100 pounds in addition to the line haul rate on transcontinental export and import traffic, which was to accrue solely to the Pacific Coast terminal lines to compensate them for the absorptions. This arbitrary was bitterly fought by the shippers and chambers of commerce at the Pacific Coast ports who secured its suspension and eventual condemnation by the Interstate Commerce Commission. In 1944 further increases in dock labor costs having forced car unloading charges upward these railroads issued tariffs placing a maximum or ceiling on the amount that they would absorb on each commodity. About this time, too, the operators who actually performed the car work found their labor costs so unpredictable that it was necessary to put much of this work on a cost plus basis. Specific harges per ton or other unit were only named in their ariffs on certain commodities based on actual cost experience over a period of several months.

From 1945 on, as the result of two substantial increases n the specifically named charges as well as the cost plus tems, the maximums that the railroads absorbed were onsistently exceeded, with the difference being billed gainst the shippers. Some shippers knew what these ifferences would be and were prepared for the balance ue bills they received. To others, these bills were an unpleasant surprise, especially if the books had been closed on the particular transaction involved and the letter of credit had expired. And as for the cost plus jobs, the effect on a shipper's disposition can well be imagined.

Many and loud were the protests. Much time and effort was expended by the carriers, port authorities and the chambers of commerce of the Pacific Coast in endeavoring to find a remedy. The railroads, while expressing willingness to cooperate in the complete absorption of these charges, felt that the burden should be shared by the shippers and by the water lines. Late in 1949, they again advanced a proposal for a scale of arbitrary rates based

(Continued on page 77)

Wilbert Ward Retiring

Wilbert Ward, vice president of the National City Bank of New York, will retire January 1. Well known in banking and foreign trade groups, he is treasurer of the U. S. Council, the American affiliate of the International Chamber of Commerce, a director of the National Foreign Trade Council, a member of the Committee on International Political and Social Problems of the Chamber of Commerce of the United States, and member of an advisory group to the National Association of Manufacturers. He is also past president of the Bankers Association for Foreign Trade, and past chairman of the administrative committee of the Foreign Credit Interchange Bureau.

Philippine Business Directory

The Pacific Trade Edition of the *Philippine Business Directory*, compiled and edited at 24 California Street, San Francisco, is now off the press.

This Directory, which contains listings of importers and exporters of the Pacific Area, is the result of painstaking research on the needs of traders and manufacturers in this country, who have an eye for new markets or expansion of their markets in the Far East.

A handbook as well as a directory, this publication contains a text of the new import control law and its appendices, the basic regulations of the Central Bank of the Philippines on exchange control, pertinent facts on Philippine trade, and miscellaneous statistical information.

The Directory is available for $2 per copy, plus 15 cents for handling and postage.

Ocean Shipping Handbook

The Board of State Harbor Commissioners for San Francisco Harbor recently published a Handbook of Ocean Shipping Procedure and directory of information concerning the Port of San Francisco. The Handbook contains invaluable information for exporters, importers, traffic managers, and world traders at home and abroad. It includes listings of port facilities, services and charges; steamship lines and agents; foreign government representatives; customs brokers; terminal and stevedoring companies; foreign freight forwarders; etc. The Handbook has many attractive illustrations, including a colored map of San Francisco Harbor.

Copies may be obtained by addressing: Robert H. Wylie, Port Manager, Board of State Harbor Commissioners for San Francisco Harbor, Ferry Building, San Francisco 6.

MARINE INSURANCE

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MARINE MANAGERS

Clayton E. Roberts — Alberto Martinez, Jr.

Fire Problems Aboard American Vessels

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Capt. Edward C. Holden, Jr.

THE Marine Section (now succeeded by the Comm. on Marine Fire Protection) of the National Fire Protection Association was organized in May 1934. At the Marine Section Meeting in 1935, tentative recommended standards were established on fire-resistant construction of vessels and fire detection, alarm and extinguishing apparatus. Subsequently, detailed U. S. Government regulations, through the Coast Guard were issued based on the standards.

The basic principles were, first, to restrict the spread of fire by dividing vessels into fire zones (length not to exceed 131 feet) beyond which the fire could not be expected to spread and, second, to limit the amount of combustible materials in any given space so that those materials would not be capable of producing a fire any more severe than the fire resistance of the confining structure. As a result, modern vessels built in the United States have fire resistant steel decks with fire resistant coverings. Stairwells and elevators are required to be enclosed, automatically operating fire doors provided at all openings, and the use of combustible trim, paneling, furniture and furnishings is severely restricted.

The Marine Section was also responsible for recommending the following safety appliances and devices being installed aboard American vessels for the protection of human life:

1. Fire protection systems, i.e. detector and extinguishing devices, and automatic sprinkler, carbon dioxide, other inert gas, or steam extinguishing systems, as now specified in the rules and regulations issued by the U. S. Coast Guard.
2. The detectors used are of the thermostatic type (usually employed in passenger quarters and certain other spaces) or the smoke detector type for cargo spaces.
3. Watchman patrol services utilizing check clocks and key stations are also generally provided aboard vessels, both in port and when under way.
4. Carbon dioxide fixed systems are installed for certain spaces such as engine rooms, pump rooms on tankers, and the steam smothering system for cargo spaces.

Continued studies are necessary for the improvement of existing fire protection and fire fighting systems. Special attention should be given to the training techniques for the personnel in fire fighting. The United States Navy is cooperating with shipowners in providing facilities for officers and men training at the various Navy Damage Control and Fire Fighting Schools.

Special studies are also necessary for fire protection and fire fighting in an area where an atomic bomb has been dropped.

The Fire Problem Aboard Vessels at Sea and in Port. Fire Safety Progress in the American Merchant Marine

American shipowners and naval architects have incorporated all known safety standards in the construction of vessels of all types for the prevention and extinguishment of fires. This accomplishment is indeed a great triumph of science and progress for safety of life at sea in American vessels. American ship safety standards exceed those of any foreign nation. In fact, few, if any, oreign passenger ships can meet our American fire safe-y standards. The moral is "Travel American passenger ships for Safety".

Cooperation for Safety

I would emphasize that we find our organized safety work is better carried out by COOPERATION by and within each company concerned than by the specter of legislation. The best safety results are attained through the medium of Company sponsored safety committees aboard vessels and in the shore organizations and with management participation.

As we unfold the story of the fire problem aboard ships at sea and in port, it should be noted that safety-minded Management is something more than the art of getting things done. Safety-minded Management, in fact, reaches beyond the developing and operating of ships and plants, beyond the problems of production, into those of administration and the higher executive functions, face to face with the greater problems of human relations in industry. Today, the fire safety problem aboard American vessels is not one alone of design and construction but one relating to the safety-mindedness of those who operate and man the vessels.

Fire

Fire has always been a weapon of war. In the earliest records of history, besiegers threw burning torches and missiles of oil into besieged cities, towns and fortresses. American colonists in block houses feared the burning arrows of the Indians. Fire has been the backdrop of war across the centuries—no warring nation has ever spared its use and today's technicians of warfare have made it a major weapon of attack. Only the blind cannot see and realize that fire ranks as a No. 1 major hazard at the present time.

During the early days of World War II, by means of the incendiary bomb, the Germans reduced Warsaw, Rotterdam and Brussels to submission. By fire, the Germans attempted to break the resistance of the British people in the terrible blitz during the winter of 1940-41.

By the use of fire, the retreating armies destroyed cities, towns and villages they were forced to abandon, in order to reduce their value to the enemy. The weapons of fire are an integral part of a modern military organization.

Saboteurs have used fire to destroy ships, terminals, and other property needed in carrying on a war.

Peace Time Fire Losses

The menace to life and property by the ravages of uncontrolled fire is not confined to times of war. Peace time fire losses are primarily the result of:

1. Negligence of individuals, particularly that of smokers.
2. Lack of fire education.
3. Lack of a properly trained fire organization.
4. Lack of modern and adequate fire prevention measures.
5. Lack of modern and adequate fire fighting appliances, methods and techniques.
6. Sabotage. (It is thought that some ship and pier fires have been set to make a "test" and to establish a "pattern" of destruction which may be used in the event of future hostilities.) In this connection, it usually happens that the evidence is destroyed in the fire; hence no tangible proof of sabotage can be established. The authorities usually say: "No cause of the fire was found but it probably resulted through a faulty wiring or electrical system."

Sabotage—What is Your Fire Vulnerability? How Good is Your Fire Defense?

We must take judicial notice of the fact that trained Communist agitators and saboteurs frequent nearly every aspect of our American way of life. The work "sabotage" was taken from the French word "sabot" meaning wooden shoe. In 1870 French patriots used their wooden shoes to block and damage the operation of machines in the Ruhr valley area to prevent manufacturing by their German conquerors. The term has grown to be recognized as covering the efforts of a foreign enemy directed to the attack and destruction of vital industrial and transportation facilities.

The following methods have been most frequently

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Boatswain Charles V. Cowing, USCG, Commanding Officer of Fort Point Lifeboat Station, Presidio of San Francisco, and his crew of a 36-foot motor lifeboat: Conrad V. Womack, EN3(1), and Ronald L. DeBeaumont, SN, search for debris and bodies on the scene of the fateful "Benevolence" sinking. Boatswain Cowing is credited with being first on the disaster scene on August 25. During the rescue operation, his unit is credited with rescuing 179 persons from the choppy water and transporting them to safety.

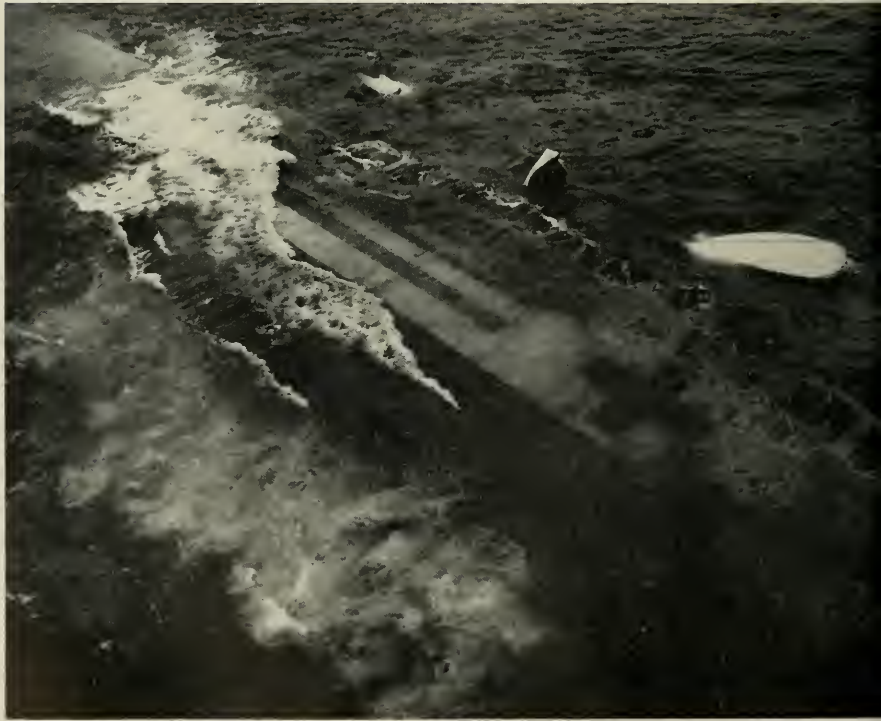
Tombstones:

A Red Cross and Three Lifeboats

Close to the Golden Gate and entrance of San Francisco Bay lies the hull of the USS *Benevolence,* a naval hospital ship. The *Benevolence,* heading into San Francisco Bay after a short shakedown run, was in collision with an out-bound freighter on Friday, August 25, 1950.

The picture below was taken from a United States Coast Guard helicopter early in the morning of Saturday, August 26, shortly after the fog had lifted from the scene of the disaster.

Official U. S. Coast Guard Photogra



ire Problems Aboard American Vessels

(Continued from page 55)

ursued by enemy agents in various countries.

1. Delayed fires have been planned and set.
   These fires have been effective on vessels as well as on piers, in plants and warehouses.
2. Explosive or incendiary bombs (or a combination of both) equipped for delayed action.
   These bombs are concealed in ship cargo, on piers or in plants, warehouses, etc., and designed to operate when the hazard is the greatest and the defenses the least wary.
3. Ignition of inflammable material or liquids by the agent working on a vessel, on a pier or in plants, warehouses, etc.
4. Damage to fire fighting equipment.
   The fire hose may be severed, valve stems may be damaged, nozzles removed, hose spanners thrown overboard, pumping equipment rendered inoperative, fire extinguishers improperly charged so that inflammable liquids would be emitted instead of extinguishing streams, wires of alarms sysrems cut, etc.

Blows to transportation through the burning of vessels, piers, plants, warehouses, railroad terminals, etc. is a "WAR OF TRANSPORTATION". This method of warfare is stated in Communist publications. All Communist agents are instructed and directed to destroy life and property "on orders from Communist Leaders". We must recognize the danger signs and take all possible measures to cope with the forces of destruction which may be released in our midst without warning.

Instruments of Destruction used by Saboteurs Aboard Vessels or Piers

A study of ship and pier fires in non-communist countries during the last several years indicates that ignition was caused by fires of an incendiary nature; possibly the work of saboteurs who were making a "test" as a pattern for future action. It is believed important that shipmasters and officers should be informed at once relative to the instruments of destruction used by saboteurs:

1. CALLING CARD INCENDIARY:

Phosphorous in solution, or wet, so as to be covered in water, will ignite spontaneously when the solution or water evaporates, and will start fires in easily ignitable materials such as cotton, straw, paper, etc.

Technically, it consists of phosphorous pressed in wet gun cotton, between sheets of celluloid, or spread on any easily ignitable material and wet with water, so that when the water evaporates the material will be ignited by the spontaneous ignition of the phosphorous.

This type incendiary might be in the form of a card, handbill, etc., sometimes containing an attractive picture.

2. OIL INCENDIARIES:

An oil incendiary might be a container of oil, such as a drum or a tarred rope coil containing tarred cotton waste. It may contain thermite or phosphorous, or sodium in addition to the oil.

One type of oil bomb is that of mixing soap with the oil, thus forming a waxlike solid, called solid oil. This is done to prevent the oil from being scattered too widely.

Sodium metal is sometimes added to the oil for the purpose of attacking docks, piers, and in general, objectives which are close to the water. Considerable amounts of heat are evolved by the reaction which causes the sodium to melt and catch on fire.

3. PHOSPHOROUS:

Phosphorous is used in certain types of bombs for the purpose of igniting materials spontaneously.

Phosphorous is ineffective in cold weather as it will not ignite spontaneously in low temperatures. It can be used effectively only in dry weather as it will not ignite when wet or damp.

4. THE INTENSIVE TYPE PHOSPHOROUS BOMB:

The phosphorous type bombs are composed of phosphorous sticks sealed in containers that will break open on impact, or phosphorous in wet gun cotton.

5. THE THERMITE BOMB:

Thermite is a mixture of oxide of iron and aluminum. The aluminum burns in the oxygen of the oxide of iron. Aluminum is very difficult to ignite in solid form, and even in granulated form. It will not continue burning in the oxygen it can take from the air. It therefore must be provided with pure oxygen in the fire bomb. The speed of its burning in the form of a thin foil in pure oxygen, is indicated by its use in the photographer's flashlight bulb.

In the fire bomb, the oxide of iron provides the oxygen with which is mixes when burning. When one particle of it is heated to its ignition temperature and begins to burn, the burning travels rapidly through the entire mass, reaching a temperature of from 4500° F. to 5000° F.

Because thermite contains its own oxygen to produce within it the burning vapors, it cannot be extinguished by cutting off the air from it. Therefore, it will burn under oil, under water, under sand, or completely sealed in melted materials, or encased in a steel shell. As it cannot be cooled below the ignition temperature, it cannot be extinguished by the cooling process.

The rate at which thermite burns is such that in case of the bomb composed entirely of this material, the burning will likely have been almost completed before it can be attacked and the fire then resolves itself into the same type fire that might occur from ordinary causes.

6. THE MAGNESIUM BOMB:

Thermite is used to ignite the magnesium shell of the magnesium bomb, and start fires around it while doing so.

7. THE GERMAN ELEKTRON FIRE BOMB:
(Now manufactured by the Communists)

The most famous of the magnesium fire bomb is the

German Elektron Fire Bomb. Elektron is a German trade name; it gets its name from the metal composing its chief incendiary material and constituting its shell. Elektron metal is similar to the Dow metal in the United States.

It contains 86% magnesium; 13% aluminum and 1% copper.

The shell is about 13½" in length and 2" in diameter.

Heavy dry sand, or salt beach sand, are best for use on bombs of this type.

Damp sand will do no harm. However, the water of dripping wet sand may accelerate the burning to such an extent as to cause the flame to break through the sand, and the burning metal to be uncovered.

Carbon tetrachloride will cause violent reaction when placed on burning magnesium, and harmful gases are produced.

Carbon dioxide does little good toward the control of magnesium fires.

A solid jet or stream of water, rather than a spray, is the most effective method of controlling the magnesium bomb.

THE FIRE RECORD ABOARD AMERICAN VESSELS—POST WAR PERIOD[1]

—FOR THE FISCAL YEARS—

	1946	1947	1948	1949
Passenger ships	14	11	8	7
Freight ships	146	74	53	33
Tank ships	36	22	26	21
Other types	122	102	129	153
Total Number Fires	318	209	216	214

THE FIRE & EXPLOSION RECORD FOR THE YEAR 1949 ANALYZED

	In Port	At Sea	Lives Lost	Monetary Damage
Passenger ships	10	0	3	$ 180,880
Freight ships	25	10	7	536,512
Tank ships	16	3	3	317,100
Other types (Tugs, Fishing & Pleasure boats)	111	39	28	3,226,480
	162	52	41	$4,260,972

It will be noted from the above tabulation that the greatest losses occurred aboard tugs, fishing and pleasure boats.

THE FIRE RECORD ABOARD BRITISH VESSELS —POST WAR PERIOD[2]

FOR THE FISCAL YEARS

	1946	1947	1948	1949
Total number of fires	248	287	492	439

Excluding Tugs, Fishing & Pleasure Boats.

THE FIRE & EXPLOSION RECORD FOR THE YEAR 1949 ANALYZED

	In Port	At Sea
Total number of fires	387	52

Divisions of Fire Prevention and Protection

Marine fire prevention and protection may logically be divided into the following divisions:

1. Vessel design, construction and installed protective systems.
2. Vessels in course of construction.
3. Vessels undergoing repairs and alterations.
4. Vessels in lay-up status.
5. Stowage of hazardous cargo and cargo handling.
6. Stowage of non-hazardous classified cargo but which may have inherent qualities causing spontaneous combustion.
7. Special problems relating to passenger vessels.
8. Special problems relating to general cargo vessels & bulk carriers.
9. Special problems relating to tankships.
10. Fire Detection Devices.
11. Fire Fighting Appliances.
12. Fire Fighting Training methods and techniques. (Most officers and men are woefully deficient in practical training for fire fighting. The U. S. Navy Fire Fighting Schools provide the best means for officer and crew training.)
13. Operation of marine terminals, piers and wharves.

The Principal Weapons for Fire Fighting

The principal weapons in the fight against fire waste are as follows:

1. Fire Prevention by Design and Material.
2. Use of "fire resistant" materials.
3. Subdivision of fire areas—confinement of fire at point of origin.
4. Automatic methods of fire detection.
5. Automatic methods of fire extinguishment.
6. Use of latest type fire fighting appliances and techniques.
7. Proper type of fire fighting organization.
8. Compliance with all safety regulations, such as egress, electrical and associated installations, the stowage of dangerous cargoes, etc.
9. Planning for fire fighting using the medium of Ship Safety Committees—a pooling of mental and physical resources for the common good. No one individual has a monopoly of wisdom. Sound, practical ideas often originate from those on the "firing line." The complex job of fighting fire requires a working knowledge of physics, chemistry and engineering, plus the power to command, and confidence, poise, and sound judgment. Crew members must become expert in handling hose, equipment and appliances, absorbing the intricacies of fire fighting, procedure and organization. They are privates in the line, whose principal duties are to attain that mobility and flexibility of action which enable them to execute commands instantly. "KNOWLEDGE IS KING" in fire fighting. Train your officers and men at the U. S. Navy Fire Fighting Schools for SAFETY. We must not fail to take advantage of the latest technical advances.

NOTE: Since the majority of fire aboard vessels at sea and in ports originate in cargo or machinery spaces, the fire fighting requirements are highly specialized.

The type of fuel or cargo involved and exposed, the access provided to fire fighters, the ventilation of the area burning, the character of the restraining bulkheads, the character of cargo or materials adjacent to and on the other side of the bulkheads exposed to fire, the installed protection and fire fighting facilities, the buoyancy and stability problems and the influence on it by the employment of large capacity water lines, CO^2, and many other problems must be considered.

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[1] From The Proceedings, United States Coast Guard.

[2] From The Shipbuilding and Shipping Record and the Annual Report of the Liverpool Underwriters Association—1949.

NOTE: Some American Shipowners have installed fixed CO^2 systems aboard their vessels for flooding fire, engine room, and cargo spaces with CO^2 in case of fire.

(This article will be concluded next month)

Dollar Decision

(Continued from page 30)

time when its financial outlook was exceedingly bad its owners "transferred" to its creditor 92 per cent of its stock. Thereafter Dollar paid off its debt in full.

"Because of the power which a creditor has over his debtor, especially a distressed debtor, equity views with considerable skepticism claims by the creditor of rights beyond the right to security and repayment.

"The Commission contends that it had power to acquire this stock because it had power to subsidize the company. Its argument in this respect is elusive and indirect. It says that it had power to subsidize, and therefore it must determine the financial qualifications of the company; it might require financial stability, and therefore it might require reorganization; thus it mighr direct a modification of the creditor rights of the United States, and therefore it had power to take ownership of the stock in exchange for the release of the sureties as part of a reorganization to qualify the Dollar Company for subsidy. That is the course of the argument in the brief before us. But however extensive the statement of the argument is, the unglossed contention is that the grant of a subsidy could be (and was in this case) part of the consideration for the outright acquisition of all the common stock of a company. A more direct contradiction of the terms and intent of the statues, both those relating to this Commission and those relating to the Reconstruction Finance Corporation, could scarcely be formulated. The subsidy and loan powers there provided were for the rehabilitation of private industry. They were not blinds for Government acquisition of operating industrial concerns. Subsidy is not a synonym for socialization. While it is perfectly true that the Commission could, and should, make all proper and desirable requirements for the protection of Government loans, its power stops at the line which separates the lender from the acquisitor. It could validly come into ownership of stock in the course of foreclosing collateral in the collection of a debt, but it could not acquire outright ownership in the guise of lending money and creating a debt. If the Commission did in fact grant the subsidy and arrange the Reconstruction Finance Corporation loan as consideration for the acquisition of outright and absolute title to full ownership of this stock, we think it exceeded any power granted it by the Congress. We do not think that it actually did so or intended to do so.

"The judgment of the District Court is reversed and the case remanded for entry of judgment in accordance with this opinion."

A monumental battle has ended, and Dollar's plans for the future of the Company will be announced after the redelivery of the stock certificates.

Port Engineers

(Continued from page 50)

can be metallized. Ship sides and deck, bridge structures and tank interiors are important areas for corrosion repair, while worn drive shafts, bearings, liners, pistons and pump parts are examples of engine room uses. Metals capable of application, and constantly available in varied qualities, include aluminum, copper, lead, monel, nickel, tin, zinc, iron, steel, babbitt, brass and bronze.

Only one of the above uses will be technically described here, namely:

Bearings

Considerable data is available on the merits of sprayed metal as a material for the rotating surfaces of bearing assemblies. Numerous tests relating to seizure loads, coefficient of friction, and wear characteristics have been conducted, with hundreds of outstanding service records on crank shafts, armature shafts and similar rotating parts which demonstrate the unusual qualities of the metallized areas.

Little information has been given industry on the advantages of sprayed metal for bushings and liners—the stationary members of bearing assemblies. Such parts not only may be easily made entirely from sprayed metal but they retain all of the unique operating characteristics of metallized rotating members.

Still more important are the oil absorbing properties inherent in these bearings. When immersed in oil they will eventually absorb as much as 10% of their weight, thus becoming virtually "oilless bearings."

The procedure in the manufacture of sprayed metal bearings is comparatively simple. It is adaptable to bushings and liners of any size or shape with relatively unskilled labor.

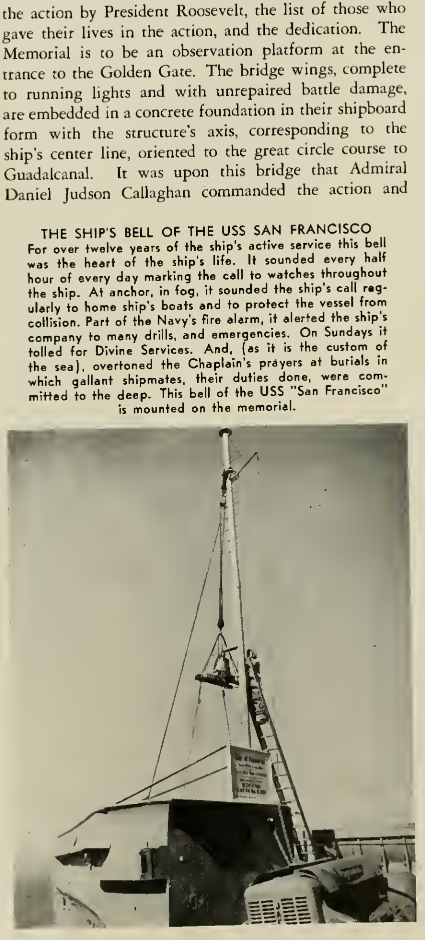
Bearings are made simply by spraying the predetermined amount of metal onto an arbor 0.001″ to 0.003″ under finish size. Since only a partial bond is provided, after finishing on the O. D., the bearings are pressed off, and finally finish reamed or broached.

With this method of fabrication almost any combination of metals can be obtained. If 0.020″ of high grade babbitt is sprayed on the arbor first, then covered with 1/16″ or ⅛″ of aluminum, the result is a babbitt-lined aluminum bearing of extreme lightness yet great strength. By using stainless or carbon steel as the secondary coating, a steel-backed bearing of excellent quality is provided. Bronze, sprayed to a thickness of 0.020″ on the arbor, can be backed with aluminum, magnesium or any other desired metal without the slightest possibility of the two becoming separated in service.

Memorial to Heroes Of USS "San Francisco"

ON November 12 at Point Lobos, Land's End, San Francisco, a Memorial was dedicated to the heroes of the USS *San Francisco* who were killed in the naval action at Guadalcanal November 12, 1942.

The Memorial is the actual bridge structure of the cruiser *San Francisco*, riddled with shells from a Japanese Naval Task Force during the night action at Guadacanal, together with the ship's mast upon which is mounted the ship's bell. The mast is set in a concrete pedestal to which is attached three bronze plaques—the citation for the action by President Roosevelt, the list of those who gave their lives in the action, and the dedication. The Memorial is to be an observation platform at the entrance to the Golden Gate. The bridge wings, complete to running lights and with unrepaired battle damage, are embedded in a concrete foundation in their shipboard form with the structure's axis, corresponding to the ship's center line, oriented to the great circle course to Guadalcanal. It was upon this bridge that Admiral Daniel Judson Callaghan commanded the action and gave his life.



THE SHIP'S BELL OF THE USS SAN FRANCISCO
For over twelve years of the ship's active service this bell was the heart of the ship's life. It sounded every half hour of every day marking the call to watches throughout the ship. At anchor, in fog, it sounded the ship's call regularly to home ship's boats and to protect the vessel from collision. Part of the Navy's fire alarm, it alerted the ship's company to many drills, and emergencies. On Sundays it tolled for Divine Services. And, (as it is the custom of the sea), overtoned the Chaplain's prayers at burials in which gallant shipmates, their duties done, were committed to the deep. This bell of the USS "San Francisco" is mounted on the memorial.

Working without pay, shipyard workers of the San Francisco Naval Shipyard refurbished the battle-scarred bridge of the *San Francisco*. Funds were provided by the San Francisco Board of Supervisors and plans prepared by Architect Henry V. Chescoe of the firm of Wilmertz and Benardi.

The U.S.S. San Francisco

The U.S.S. *San Francisco*, a heavy cruiser of 10,000 tons displacement, built at the Mare Island Naval Shipyard, was commissioned on February 10, 1934.

In May of 1941, Captain (later Rear Admiral) Daniel Judson Callaghan, U. S. Navy, assumed command of the *San Francisco*, under which the ship withstood the Japanese attack at Pearl Harbor on December 7, 1941. Captain Callaghan commanded the ship in actions in the Gulf of Papua, New Guinea, on March 10, 1942, after which, in May, he was promoted to the rank of Rear Admiral and relinquished command of his ship to become Chief of Staff for the South Pacific command.

In 1942 the *San Francisco* participated in the operations that landed General Vandegrift's reinforced First Marine Division on Guadalcanal, and she led our naval forces in successful action at the Battle of Cape Esperance on October 11-12, 1942.

In late October, 1942, Rear Admiral Daniel J. Callaghan, U. S. Navy, returned to the U.S.S. *San Francisco* to make her his flagship. Admiral Callaghan directed the landing of the 8th Marines at Lunga Point and another force at Aola Bay, and bombarded Koli Point.

During the night of November 10-11, Rear Admiral Callaghan's cruiser division reported to provide escort to Rear Admiral (now Admiral, retired) R. K. Turner, U.S.N., who was in over-all command of our Guadalcanal Forces and who was charged with the great responsibility of reinforcing the critical needs of his ground forces on the desperately contested island. The operation was interrupted, briefly, by a torpedo plane attack the afternoon of November 12, during which the *San Francisco* was damaged when an enemy plane crashed aboard her, and, again that evening, when word was received of the approach of a heavy Japanese surface force.

The attack promised by the latter threat required the retirement of the transports and supply vessels.

Shortly after midnight of November12, 1942, Admiral Callaghan, commanding five cruisers* and eight destroyers, engaged the Japanese forces of two battleships, a cruiser and eleven destroyers, in an action fought at point-blank range, that lasted only 24 minutes, and that has been characterized in the Navy's official reports as "one of the most furious sea battles ever fought." In that wild melee the eight inch and six inch guns of cruisers fought the fourteen inch batteries and heavy armor of

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**San Francisco, Portland, Helena, Atlanta, Juneau.*

REAR ADMIRAL DANIEL JUDSON CALLAGHAN, USN

Daniel Judson Callaghan was born in San Francisco, July 26, 1890. He was appointed to the Naval Academy in 1907 and graduated with the class of 1911. He was appointed Naval Aide to the President, July 14, 1938 and served in that capacity until May 1941, when, as Captain, he assumed command of the USS "San Francisco". On May 2, 1942 he was transferred to Headquarters, South Pacific Area and South Pacific Fleet, becoming, as Rear Admiral, chief of staff to Commander of that Force on June 19, 1942, and later assumed command of a Task Force, Pacific Fleet.

Rear Admiral Callaghan was killed in action during an engagement with the Japanese fleet in the Solomon Islands on November 13, 1942, and was awarded the Medal of Honor posthumously by President Roosevelt.

the battleships *Hiei* and *Kirishima.* The *San Francisco* received forty-five hits, fifteen of major calibre. Twenty-five fires were started aboard the ship during the twenty-four minutes of action, and severe flooding was suffered.

In this fight to turn the tide of the Pacific war, our country lost Admiral Callaghan, the Commanding Officer of his flagship, Captain Cassin Young, and ninety-eight others of his gallant shipmates.

The *San Francisco's* courageous survivors, under command of Lt. Comdr. (now Rear Admiral, retired) Herbert E. Schonland, U.S.N., saved their ship to fight in many more actions of the war. The *San Francisco* returned to the Pacific Fleet and fought in the Aleutians, at Wake, the Gilbert, Marshall, Caroline and Palau Islands, off New Guinea, and in the Marianas. Later she joined fast carrier task forces supporting the amphibious landings in the Philippine Islands, on Iwo Jima and Okinawa and in Korea and China.

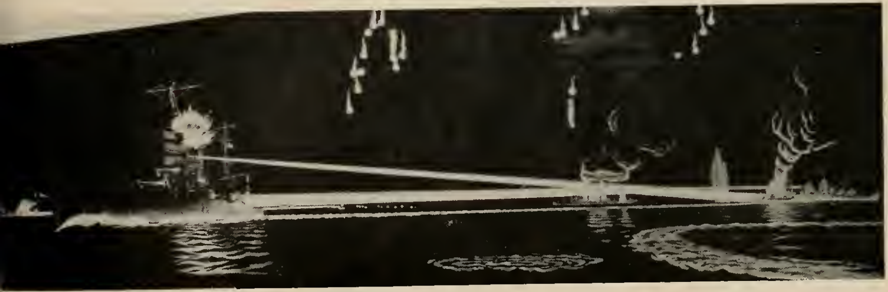
She returned home to San Francisco on December 17. After a short overhaul, she departed the Pacific for Philadelphia. There, on January 19, 1946, she was inactivated, and there she remains moored, ready for recall to service.

During the war the *San Francisco* fired 180,000 rounds of ammunition in combat and steamed 281,757 miles—more than eleven times the earth's circumference. She participated in two surface actions and numerous air-sea actions, totalling thirteen major operations. The official records of the Navy credit this stout ship with silencing and disabling one enemy battleship, sinking one heavy cruiser and four destroyers, assisting in the sinking of one and damaging two other cruisers, and destroying thirteen planes and numerous small craft.

She bore the name of *San Francisco* proudly and valiantly, winning the Presidential Unit Citation — the Nation's highest tribute to a ship and all her company.

The photo below is of a mural by Bailey Cole.

During the black night of November 12-13, 1942, the American Task force consisting of thirteen combat ships joined battle. Passing between two of the three columns of the huge Japanese invasion force, the darkness was suddenly illuminated by flares, searchlights, gun fire and burning ships as the furious night engagement took place at close range with eighteen Japanese ships which included two battleships and six cruisers. Our force, led by four destroyers, was followed in column by the light cruiser "Atlanta," heavy cruiser "San Francisco," heavy cruiser "Portland," light cruiser "Helena," light cruiser "Juneau," and four more destroyers. The picture shows the eight inch gun cruiser "San Francisco," our flagship, and a Japanese fourteen inch gun battleship of the Kongo class, firing point blank, each illuminated by the other's searchlights. A heavy shell is bursting on the "San Francisco's" flag and navigation bridge, killing Admiral Daniel J. Callaghan, USN, and Captain Cassin Young, USN. Lt. Cmd. Bruce McCandless, USN, wounded, regained consciousness and assumed command as senior surviving officer on the bridge. At extreme left, a Japanese light cruiser of the Sendai class is burning and firing, caught in the "Portland's" searchlight. Right center, a heavy Japanese cruiser of the Furutaka class, dead in the water, is burning. Although we lost the "Atlanta" and the "Juneau," the "San Francisco" limped back to port; and the first heavy blow was struck, turning back the big Japanese invasion force, and Guadalcanal was saved.
During this battle, as well as those in the Coral Sea, at Midway, and at Santa Cruz, Captain Theodore Wirth, present Chief of Staff to Admiral Rodgers of the Twelfth Naval District, was Executive officer on the cruiser "Portland."



Numbered and Undocumented Vessels

The table below gives the cumulative total of undocumented vessels numbered under the provisions of the act of June 7, 1918, as amended (46 U. S. C. 288), in each Coast Guard district by Customs ports. Generally speaking undocumented vessels are those machinery-propelled vessels of less than 5 net tons engaged in trade which by reason of tonnage are exempt from documentation. They are also those motorboats and motor vessels of 5 net tons and over used exclusively for pleasure purposes which are not documented as yachts or those of less than 5 net tons which by reason of tonnage, are not entitled to be so documented.

Coast Guard District	Customs port		Total
1 (Boston)	(4) Boston	15,545	33,693
	(1) Portland, Maine	11,041	
	(2) St. Albans	2,831	
	(5) Providence	4,276	
2 (St. Louis)	(45) St. Louis	16,921	42,490
	(12) Pittsburgh	2,392	
	(34) Pembina	80	
	(35) Minneapolis	6,459	
	(40) Indianapolis	4,279	
	(42) Louisville	4,010	
	(43) Memphis (part)	7,777	
	(44) Vacant (Des Moines)	76	
	(46) Omaha (part)	496	
3 (New York)	(10) New York	47,754	77,201
	(6) Bridgeport	8,511	
	(11) Philadelphia	20,936	
5 (Norfolk)	(14) Norfolk	15,903	46,879
	(13) Baltimore	22,537	
	(15) Wilmington, N. C.	8,439	
7 (Miami)	(18) Tampa (part)	22,492	28,297
	(16) Charleston	1,885	
	(17) Savannah	3,410	
	(49) San Juan	430	
	(51) St. Thomas	80	
8 (New Orleans)	(20) New Orleans	19,697	45,121
	(18) Tampa (part)	811	
	(19) Mobile	8,081	
	(21) Port Arthur	3,972	
	(22) Galveston	10,456	
	(23) Laredo	2,022	
	(24) El Paso	6	
	(43) Memphis (part)	76	
9 (Cleveland)	(41) Cleveland	14,046	90,976
	(7) Ogdensburg	6,567	
	(8) Rochester	8,647	
	(9) Buffalo	8,183	
	(36) Duluth	4,149	
	(37) Milwaukee	12,466	
	(38) Detroit	28,689	
	(39) Chicago	8,224	
11 (Long Beach)	(27) Los Angeles	8,551	10,359
	(25) San Diego	1,713	
	(26) Nogales	95	
12 (San Francisco)	(28) San Francisco	20,309	20,309
13 (Seattle)	(30) Seattle	32,443	43,264
	(29) Portland, Oregon	9,793	
	(33) Great Falls	1,028	
	(46) Omaha (part)		
14 (Honolulu)	(32) Honolulu	3,369	3,369
17 (Juneau)	(31) Juneau	6,559	6,559
Grand total			448,517

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New York Harbor
Beaumont, Texas
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Quincy, Mass.
Sparrows Point, Md.
Terminal Island, Calif.
Staten Island, N. Y.
Beaumont, Texas
San Francisco, Calif.

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Shipbuilding Division
General Offices: 25 Broadway, New York 4, N. Y.

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Testing Western-Made Henco Anchors

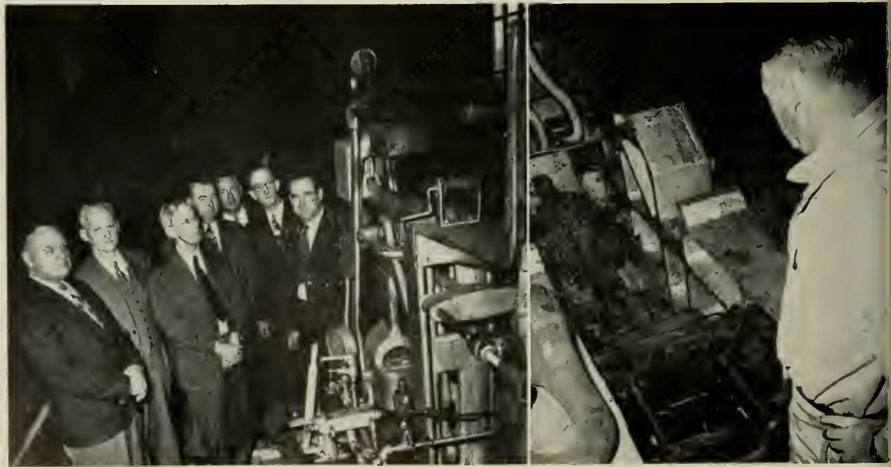
A row of Henco Nickeladium anchors on the foundry floor.

The casting and testing of C. J. Hendry's Henco anchors is a precise and carefully supervised operation. The foundry is approved by the Coast Guard, and the testing apparatus and the actual testing are approved by the Navy, the American Bureau of Shipping, and Lloyd's Register of Shipping.

C. J. Hendry's anchor testing equipment includes an intricate 40-foot unit called the Tinius Olsen Anchor Testing Machine. Into this is inserted a Morehouse Proving Ring; its expansion under pressure is checked with micrometers. This Proving Ring is operated under the supervision of a representative from the Baldwin Locomotive Works (now Baldwin-Lima). Testing machine and Ring have a capacity of 200,000 pounds.

C. J. Hendry's Henco anchors are the only line made in a complete range of sizes right here on the west coast. Sizes are made for fishing boats and other light craft as well as sizes up to 10 ton for larger vessels. These larger sizes are tested and certified.

Left: The balance scale end of the testing machine. Witnessing the calibration of the 200,000 lb. testing machine are Carleton Tibbetts, president of Los Angeles Steel Casting Company; M. J. Bloomfield of Lloyd's Register; John A. Logan of C. J. Hendry Company; H. L. Roscoe, U. S. Naval Inspector; R. A. Lewis of Los Angeles Steel Casting Company; F. E. Wagener of C. J. Hendry Company; and John Black of American Bureau of Shipping. Right: The Morehouse Proving Ring inserted in the machine. It will be recognized in the center foreground.



National Port Authorities' Meeting in San Francisco and Oakland

Several hundred leading port authorities from the United States, Canada, South and Central America gathered in Oakland and San Francisco for the thirty-ninth annual meeting and convention of the American Association of Port Authorities October 3-7, presided over by Athur H. Abel, Port Manager and Chief Engineer of the Port of Oakland, president of the association.

A special meeting was called on port security, with Brigadier General Besson, J. H. Alderson, chief engineer, Los Angeles fire department, and Rear Admiral J. E. Stika, Commander, Western Area, U. S. Coast Guard, as the speakers. The remainder of the afternoon was taken up with a boat tour of San Francisco and Oakland harbor installations.

Two specially important panels were "Waterways of the Northwest" with Colonel Warren D. Lamport, General Manager, Port of Seattle, as chairman, and "Intercoastal and Coastwise Shipping from the Shippers Point of View," with Captain D. J. McGarity, General Manager, Commission of Public Docks, Portland, Oregon, as chairman.

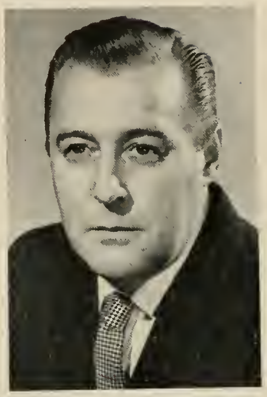
Luncheon on Thursday, Oct. 5, was held at the Claremont Country Club in Oakland, and afternoon spent with golf, swimming, bridge, at the club, and scenic tours of the east bay cities, including the Oakland area and the University of California. Dinner that evening was in the Florentine Room at the Hotel Claremont in Berkeley with U. S. Senator Warren Magnuson as the speaker of the evening. He is the author of the recently passed Magnuson Act giving President Truman power to safeguard the security of ports and waterfront areas without a national emergency.

Claire V. Goodwin, president of the Oakland Board of Port Commissioners, was convention chairman, and General Robert Wylie, Port Manager of San Francisco, was program chairman.

Top: A. H. Abel of the Port of Oakland, retiring president of the American Association of Port Authorities speaking, with Vice Mayor Ray Pease of Oakland (center) and R. K. Smith of Canada (right).

Center: Guests at head table. Left to right: A. H. Abel of the Port of Oakland, retiring president; General Robert Wylie of San Francisco; Brig. General Frank S. Besson, Assistant Chief of Transportation, Washington, D. C., Claire V. Goodwin, president, Oakland Board of Port Commissioners.

Bottom, left to right: General Robert Wylie of San Francisco; Mrs. Wylie; Claire V. Goodwin; U. S. Senator Warren G. Magnuson of Washington; Mrs. Goodwin.



Senator Warren G. Magnuson, speaker at convention.

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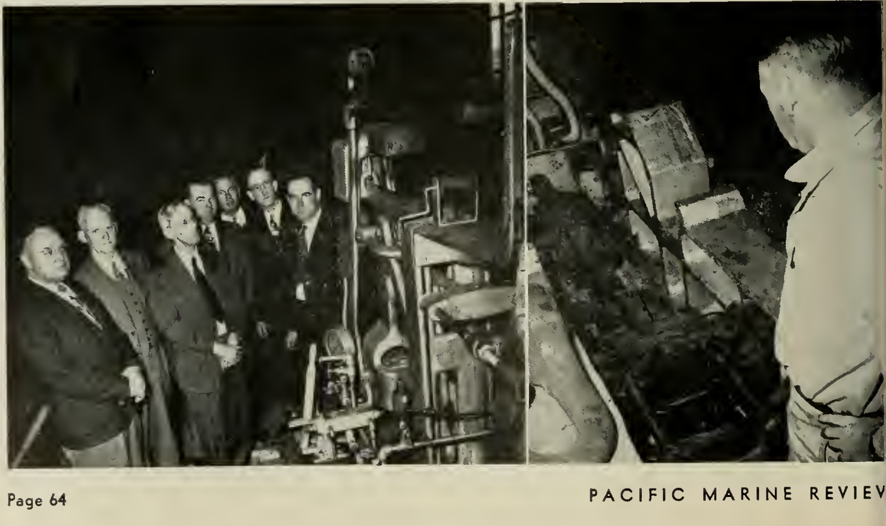

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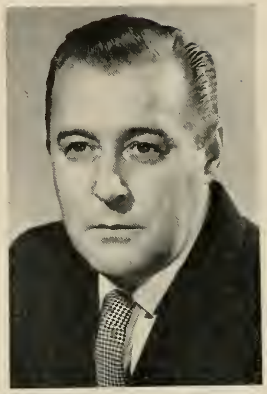

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Welin in Cruiser and Workboat Field

FOR nearly fifty years the name "Welin" has been synonymous with safety at sea. Welin life-boats and davits are known to seamen in every corner of the world. In its half-century of operation more than twenty thousand life-boats have been built by this company. They range in size from the sturdy, little 12-footers used aboard harbor tow-boats, to 37-feet, 140-passenger, self-propelled craft carried by de luxe liners.

Now a new type of boat is being built by Welin. They have begun a permanent program of cruiser and work boat construction at the Perth Amboy, N. J., plant.

The hull bay at the Welin Davit and Boat plant in Perth Amboy, shows three production lines. On the left are the bare hulls of the new Welin Cruisers and workboats, while the other two lines are occupied with both galvanized steel and aluminum life boat hulls in various sizes. Ten stations on the line are operated from forming jig to completed craft. On the cruiser assembly line, pre-built units such as one-piece galleys, dinettes and cabins are installed.

These new craft of the Welin Steel Fleet are 26 feet long with a ten-foot beam. Hard-chined, they draw 32 inches of water. The hulls are built of 12-gauge copper-bearing, galvanized steel. The high tensility of the copper alloy steel, when hot-dipped in zinc, makes these craft virtually puncture and rust proof.

Three different types of five planned styles have already been built and have been sold to boat owners across the country, through Welin Cruiser dealers. First model, mass produced, is a sedan-type cruiser which boasts sleeping accommodations for four persons. The compact cabin includes a one-piece galley unit which, topped by stainless steel or formica, embraces a sink and refrigerator. A dinette for four persons converts into a bunk for two, as does a divan. Both are cushioned in deep foam rubber.

The pilot sits at a built-in chair on the starboard side. An automotive-type Ross steerer tops an airplane-style instrument panel. Forward, there is an enclosed 'head,' hatch-ventilated. All cabin woodwork is solid mahogany, while opening plate glass windows give 360° visibility. The roomy cockpit is self-bailing.

The standard power plant is a 100 HP Packard Marine, six-cylinder gasoline engine with a two-to-one reduction gear, swinging a 19x16 wheel. Consistent performance tests of stock models in various sea and wind conditions, show a top speed of 17.9 MPH. Optional installations of gasoline or diesel engines are available on workboat models to suit specific jobs.

Other models are the flying bridge express cruiser, the sports fisherman, the utility boat and the day cruiser.

Hull design was perfected by Welin's engineering department. Their efforts resulted in a semi-displacement hull, tension-free and non-pounding. The 26-footers are level-riding and dry, while Welin's patented, rivet-construction assures quietness of operation.

Keel-built, rather than with the usual vee-bottom common to most small cruisers, Welin Cruisers have "on-the-dime" maneuverability and absolute control without drifting or sloughing. At the present time Welin is producing one boat a day in addition to the constant life-boat and davit building, and plans call for construction of three boats per day using present facilities.

Welin Davit and Boat is one of eight divisions of Continental Copper and Steel Industries Inc. of which William F. Hickson, general manager of Welin, is a vice president.

Strong, initial interest in maritime circles has been evidenced toward work boats built from these stock hulls. According to Welin, requests for prices and specifications have come from such widely diversified sources as the U. S. Army Engineer Corps for patrol craft, oil companies for personnel carriers, the fishing industry for inshore work, and foreign sources. Readers may receive specifications and full information by writing to Welin.

Test run for a Welin Cruiser. A Family Sedan, one of five different models of cruisers built on the same hull design, gets a speed run on a measured course. Carrying 80 gallons of gasoline in two separate tanks, the Welin Cruiser averages 17.9 MPH in varying sea and wind condiitons, with the standard engine installation of a Packard 100 HP, with 2/1 reduction gear. Optional power plants in both gasoline and diesel are available for different job uses.

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What is this Tidelands Question?

Write for free copy of our new brochure, "What is this Tidelands Question?"

Gas Turbines

(Continued from page 49)

be coming from the left as 100%, represented by the distance from C to D. Of this 20% goes out of the system as the mechanical equivalent in net HP to drive the load. Thus the system has a thermodynamic efficiency of 20%,—not at all bad compared to the steam locomotive of 5 or 6%, the steam plant on this ship of 17 to 22%, or a good shore side steam plant of 25 to 30%, or the diesel engine's 30 to 40%.

"Now note that the turbine is putting out power equivalent to the 20% for the net output plus 50% to drive the compressor, a total of 70%. Here is a turbine developing power equivalent to 70% of the heat coming in. This is, of course, unreasonable and impossible but can be accounted for by the 42% power equivalent in the compressor discharge (put there by the turbine) plus the 8% compressor losses now in the form of heat, some of which the turbine can use, a total of 50%, which is the turbine input to the compressor. This 50% is called the circulating power and explains the large size of the machine for the small power put out to the useful load.

"The 8% turbine loss as well as the 8% compressor loss represent a machine efficiency of approximately 85% as 85% of 50 is 42½ or a loss of 7½.

"Your attention is called to the 2% turbulence loss and the 4% pressure drop loss at the top of the sketch. When handling gas under pressure at the rate of 70 to get a net 20 (see sketch), the slightest loss in eddies or carrying gas around corners unnecessarily or any small drop in pressure between the compressor outlet and the turbine nozzles subtracts from the already small net power output quite drastically. For instance, if these two losses were each increased only 1% we deduct 2% from the useful net to leave us only 18% output, which drops the thermo dynamic efficiency down to 18%, a drop of 2 points or 10% of the original. Thus slightest changes in cycle or machine losses make profound changes in overall efficiency. In fact, if the turbine and compressor efficiency were dropped to 75% each, the net output would be wiped out altogether and we would get no power out of the machine. And up to 10 years ago 75% efficiency was considered good on turbines and compressors.

"This subject will be discussed in our next seminar when we will discuss means of improving this overall efficiency by regeneration (returning exhaust heat into the cycle and interstage cooling of the compressor). Several seminars will be needed to cover the subject of gas turbines.

"I can see a question forming in Mac's mind already. The answer is no. You will not have to know all the thermodynamics of gas turbines in order to operate them. A good engineer will naturally be interested in new and different things. A poor engineer will not. So do not worry. Try to understand what you can, do a little thinking occasionally and you will be good marine engineers whether we use steam, diesel or gas."

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- Every 12 days to and from Philippines, Japan, Hong Kong.
- Monthly to and from Hawaii, North China.
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Finnesey Succeeds Dundon At Pope & Talbot

Kenneth H. Finnesey, vice president and general manager, Pope & Talbot Steamship Division. He succeeded Gerald Dundon on November 1 but before taking office went on an extended tour of the Caribbean East Coast of South America, and New York routes of the Pope & Talbot Line. Finnesey has been in shipping for twenty-eight years. Prior to his present appointment he was a director, vice president and California manager for States Steamship Company.

Grace Line Names New Directors

THE Board of Directors of Grace Line has named three new Directors, Allen S. Rupley, C. C. Mallory and James E. Magner, and has elected E. Russell Lutz a Vice President.

The new Directors all have had long and distinguished records of service with the Grace Organization. Mallory, Vice President and Treasurer of Grace Line, joined Grace in 1921 as Assistant Auditor of the Pacific Mail SS Co. in San Francisco and after the sale of the Shipping Board ships operated by this Company to the Dollar interests, he assisted in the organization of the Panama Mail SS Co. and became its Assistant General Manager and Treasurer. In 1930 he was made Vice President and General Manager of the Panama Mail and Vice President of Grace Line, remaining in that capacity in San Francisco until 1934 at which time he was transferred to New York. He was elected Treasurer of Grace Line Inc. in 1937. During the war he served as Director of Operating Cost Control for the War Shipping Administration.

Allen S. Rupley

E. Russell Lutz

Magner joined Grace Line in 1917 in the Operating Department, and, after transferring to the Freight Traffic Department in 1925, he was made Freight Traffic Manager in 1928. He was named a Vice President of Grace Line in 1941 and in 1946 assumed charge of Passenger and Freight Traffic and the supervision of advertising and promotion activities. During the war he served with the War Shipping Administration as District Manager of one of the major Atlantic Coast districts in the United States.

Rupley, a Vice President of W. R. Grace & Company, has been with the Company since 1917. Among his posts with W. R. Grace & Co. have been those of an Assistant Secretary, Manager of the Company's activities on the Pacific Coast and later in Central America. He was named an Assistant Vice President in 1947, Treasurer in 1948 and a Vice President in 1949.

Lutz has been with the Grace Organization since 1949 when he joined the firm as Manager of the Washington, D. C. office, a position he continues to hold. Before entering business, Lutz, an attorney, had been in government service. From 1926-1937 he was with the Department of State, first as Assistant Solicitor, then as Assistant Legal Advisor under Secretaries Kellogg, Stimson, and Hull. From 1937-1941 he was associated with the U. S. Maritime Commission, serving from 1939-1941 as its Assistant General Counsel. Lutz came with Grace from the American President Line, San Francisco, for whom he had been Executive Vice President, Vice President in charge of Foreign Administration, and Acting President.

Byers Co. Appoints S. F. Manager

A. M. Byers Co., Pittsburgh, Pa., America's largest wrought-iron manufacturer, has announced the appointment of A. D. Sheere as manager of its San Francisco division. He succeeds P. D. Tabler, who is retiring. Sheere, who joined the Byers firm in 1924, was formerly manager of the Houston division.

A. D. Sheere

Allen Returns to EHG

Harry Allen has returned to the staff of Ets-Hokin & Galvan after a prolonged leave of absence. He will again specialize in the marine and industrial electric and electronic fields.

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Pacific Transport Lines Appointments

Pacific Transport Lines, Inc., San Francisco, has announced appointment of the following executives to its San Francisco general staff:

Don C. Boyd, in charge of all outward bookings, former Pacific Coast manager of Hawaiian Freight Forwarders Ltd.

Jack Dore, chief clerk and in charge of documentation, former district freight agent in the Company's Los Angeles office.

J. M. Fox, district freight agent in charge of inbound solicitation, former inbound district freight agent for American President Lines.

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Schilling Marks Thirty Years With Texaco

Herbert W. Schilling, Assistant to the Manager of the Marine Sales Division of The Texas Company, has marked thirty years representing Texaco with the shipping industry.

Herbert W. Schilling

Starting with the Company in 1916, Schilling became marine salesman in the New York Division in 1920. In June, 1940, he was advanced to the position of Marine Representative and transferred to the General Domestic Sales Department and in 1944 was promoted to his present position, as assistant to J. G. van Santvoord, Manager of the Marine Sales Division.

In his thirty years association with the shipping industry he has made a host of friends in maritime circles not only in New York, but all along the Atlantic and Gulf Coasts. He is a member of the Propeller Club, Rudder Club and Downtown Athletic Club.

J. L. O'Brien Promoted by Matson

J. L. O'Brien, Matson's General Passenger Agent in Los Angeles, has been promoted to the position of Passenger Traffic Manager with headquarters in San Francisco.

J. L. O'Brien

The announcement was made by George F. Hansen, Matson Vice President, who said that the new Passenger Traffic Manager would assist in the general administration of the department with particular emphasis on directing and coordinating the business development of all Matson passenger offices.

O'Brien is being succeeded in Los Angeles by L. D. Bale, who has been Chief Purser of the liner *Lurline.*

O'Brien joined Matson in 1930 and has had continuous service in the Passenger Traffic Department. He was first attached to the San Francisco office and later went to Sydney, Australia for five years. He later was transferred to Los Angeles and after that was appointed General Agent for Matson in Chicago. Three years later he went to Los Angeles as General Agent.

Harry W. Pierce President American Welding Society

The American Welding Society has elected Harry W. Pierce as its President for the coming year. Pierce, who is Assistant to the President of New York Shipbuilding Corporation, Camden, N. J., assumed his office at the close of the Society's 31st Annual Meeting at the Hotel Sherman, Chicago, during the week of October 22nd.

Pierce is a graduate of the United States Naval Academy, Class of 1922, and a postgraduate in Naval Construction from the Massachusetts Institute of Technology, 1925-26. After serving as Naval Constructor, U. S. Navy, until 1930 he became associated with the New York Shipbuilding Corporation. Most of his work with his present company

Harry W. Pierce

has been connected with welding in ship construction.

During World War II Pierce handled several projects for the Bureau of Ships, Navy Department, and received the Certificate of Commendation from the Bureau. He has served on many advisory committees dealing with the investigation of welded stresses in ships, steel for ship construction and corollary investigations. In 1947 he was granted a four-month leave of absence to assist in a study of the Japanese shipbuilding industry for the War Department.

Pierce is also a member of the Society of Naval Architects and Marine Engineers, The American Society for Testing Materials, vice-president and a director of the Engineers Club of Philadelphia, and honorary member of the Japan Welding Society. He is president of the Philadelphia Maritime Society.

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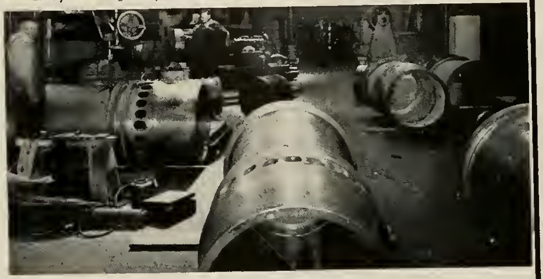

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Phone YUkon 6-5288
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SAN FRANCISCO, CALIF.

George Paine is APL Vice-President

George T. Paine, former Commander of the Terminal Island Naval Shipyard and a well-known ship construction expert, has been appointed to the position of Vice President — Operations for American President Lines.

Paine, a retired Naval officer with 30 years service, has been serving as APL's Operating Manager, and prior to that time served in several executive positions within the Operating Department.

A native of Warwick, Rhode Island, he received his education at Brown University, Harvard and Massachusetts Institute of Technology. As a Naval officer in the first World War, he was assigned as construction inspector of destroyers and submarines at Bethlehem Shipyards, San Francisco; later as inspector of merchant ships taken over by the Navy.

His career included two years of sea duty as an officer on submarines, and from 1931 to 1934 he was assigned to the Office of the Secretary of the Navy. From 1934 to 1940, Paine was a construction superintendent at the Norfolk Naval Shipyard, and from 1940 to 1945, he was production officer of the Boston Naval Shipyard, where he supervised all work except planning and design.

While Commander of the Terminal Island Naval Shipyard, from 1945 to 1947, he was also industrial manager for the 11th Naval District. In 1947, at his own request, he retired with the rank of Commodore to enter the commercial field.

George T. Paine

Paine joined American President Lines in February, 1949, as Superintendent of new construction.

Business is never so healthy as when, like a chicken, it must do a certain amount of scratching for what it gets.—*Henry Ford.*

Too many persons want to lean upon the Government; too many are thinking of security instead of opportunity.—*James F. Byrnes.*

The only time you don't want to fail is the last time you try. — *Charles F. Kettering.*

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Gigy Appointed Agent for Cargocaire

On a recent trip to San Francisco, Oliver D. Colvin, President of Cargocaire Engineering Corporation, 15 Park Row, New York, announced the important appointment of M. J. Gigy & Associates as their Sales and Service Agents.

Both Merrill Gigy and Vern Keays of M. J. Gigy & Associates were previously associated with Cargocaire Engineering Corporation, and therefore are able to render engineering and technical assistance and service as well as aid in the preparation of installation estimates.

Merrill J. Gigy and Vernon Keays of M. J. Gigy Associates, and (center) Oliver Colvin of Cargoaire. The Gigy firm has resumed representation of Cargoaire and is equipped to service present installations.

From its widespread use in the protection and preservation of ordinary cargo, Cargocaire has become popular in tankers also, both here and abroad. Most recent specifications include those of the V-2000 vessels at New York Shipbuilding Company, and the prototype vessels.

The Gigy firm has stocks of supplies and parts for servicing Cargocaire installations, and steps right into the business with both experience and equipment.

A Quote from a Sperry Letter

"Many thanks for your recent publication of our Sperry School schedule in the *Pacific Marine Review*. Although we have been under way for the last twenty-eight years, the large number of inquiries for our Loran, Radar and Gyro courses shows the thoroughness with which the seagoing brotherhood peruse your publication."

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Delbert Kay Retires From Nordberg

Delbert Kay has resigned his position as Advertising Manager at Nordberg Manufacturing Company, Milwaukee, Wisconsin under a company retirement plan. During the 27 years that Kay served Nordberg as Advertising Manager, the company greatly expanded its operations until today the name of Nordberg has world-wide recognition for its Diesel engines, mining and quarrying machinery and railway track maintenance equipment. Kay was in charge of advertising for all company product divisions.

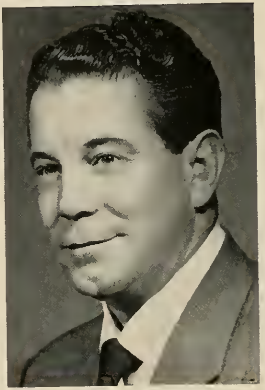
Advertising duties performed by Kay have been assumed by J. D. Grace, Manager, Advertising and Sales Development Department.

General Motors Appointment

The appointment of Robert W. Phillips as Assistant to the Marine Sales Manager of the Detroit Deisel Engine Division of General Motors has been announced by V. C. Genn, General Sales Manager of the Division.

Phillips comes to Detroit Diesel from the Maritime Commission where he was Assistant Chief Construction Supervisor on the new superliner *United States.* He has also held executives sales and engineering positions in several maritime organizations and shipbuilding corporations.

In his new capacity Phillips will be Assistant to W. C. Gould, Marine Salesmanager.



Robert W. Phillips

New Ships for Good Neighbor Fleet

Moore-McCormack Lines was the only bidder in response to the invitation to bid for the continuation of the charter of the Good Neighbor Fleet issued on August 16, 1950, the Maritime Administration announced.

The plan for replacement submitted by the company called for the construction of two vessels of 23,000 gross tons each and a speed of 23 knots. They would be 647 feet over all in length and have an 88-foot beam. Each vessel would carry 496 first-class and 220 cabin-class passengers, and would be air-conditioned throughout. The two ships would make 20 round trip voyages per year. The proposal calls for the construction of these vessels with the aid of a construction-differential subsidy, and their operation under an operating-differential subsidy.

The period of charter of the *Argentina, Brazil* and *Uruguay* is to extend until completion of the voyage in progress at the time the replacement vessels are delivered, but shall not exceed four years.

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Woll Honored by General Petroleum

Arthur O. Woll, manager of General Petroleum Corporation's Marine Department, and a member of the board of directors, recently completed forty years of service with the company, and was honored by fifty top executives of the company at a luncheon at the California Club, Los Angeles, in October. President of the company, R. L. Minckler, presented him with a diamond-studded forty-year pin.

A diamond-studded forty-year service award is pinned on Arthur O. Woll, manager of the General Petroleum Corporation's marine department and a member of the board of directors, by R. L. Minckler, president of General Petroleum.

Woll started his marine career as a stenographer in a ship repair yard near Brooklyn, N. Y. He served in the Army during the first World War, spending most of his time at sea as a cargo officer in the Transport Service.

Woll has been a member of the board of directors of General Petroleum since 1938 and manager of marine operations since 1934. He came to the Pacific Coast in 1923 as marine representative of Socony-Vacuum and became assistant manager of General Petroleum's marine department in 1927 when the compeny merged with Socony-Vacuum.

He is the second General Petroleum man to win a forty-year service pin.

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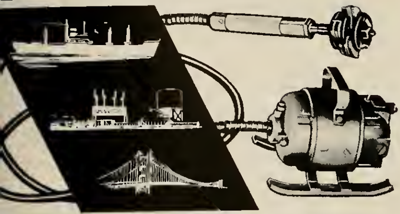

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Pacific Transport Lines Offices In Chicago and Washington

Pacific Transport Lines, Inc., San Francisco, major transpacific freight and passenger service, has opened its own offices in Chicago and Washington. Previously, the Company was represented in those areas by Ajax Steamship Agencies, Inc.

Philip A. Dunlap will be in charge of the Chicago office with the title of midwestern traffic manager. He held a similar position with Ajax. The Chicago office and telephone number will remain unchanged: 327 South La Salle St., Wabash 2-2688—89; Teletype, CG-1031.

H. S. Erichsen will manager the Washington, D. C. office. He was similarly employed by Ajax Agencies. The address and telephone also are unchanged: Suite 116, 1625 "K" Street, N. W., Phone National 6625.

Ajax Steamship Agencies will continue as Pacific Transport Lines' East Coast freight agents except for the above changes.

J. H. Schaefer Company will also remain as Company agents in Detroit.

The new developments are in line with Pacific Transport Lines' progressive policy of opening its own offices in important business territories.

Say It With Pineapples

Hawaii Chamber of Commerce sends two boxes of pineapples to the San Francisco Chamber of Commerce and Wine Institute in thanks for two cases of wine sent the Hawaiian Chamber of Commerce on the occasion of the inaugural sailing earlier this year of the first vessel in Pacific Transport Lines new service between California and Honolulu. Left to right are Maitland S. Pennington, vice-president, and Richard A. McLaren, president, Pacific Transport Lines; Capt. F. M. Leary, master of Philippine Transport which brought gift; Paul A. Bissinger, president, S. F. Chamber of Commerce; and James Donnelly, representing the Wine Institute.

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Committee on Subsidy Fairnes

Dr. Walter H. E. Jaeger has been named as the t member of the special committee set up to assist the eral Maritime Board in examining the fairness of prices at which the former Maritime Commission c tracted to sell certain passenger liners, Vice Admiral Cochrane, Chairman, Federal Maritime Board, has nounced.

The other members are H. L. Seward, Professor Em tus of Mechanical and Marine Engineering, Yale U versity, chairman; and R. E. Gillmor, Vice Presiden the Sperry Corporation. The committee members se in a consultative capacity on a temporary basis. committee is expected to complete its work before end of the year.

Oakland Port Brochure

The Oakland Board of Port Commissioners has iss a 30 page profusely illustrated book describing the fac ties of the Port of Oakland and the Oakland Munici Airport.

Prepared under the direction of A. H. Abel, P Manager and Chief Engineer, the book is bound in g covers and the cover bears a night photograph of Port's Outer Harbor Terminal, and the big neon s which advertises the Port to travelers on the San Fr cisco-Oakland Bay Bridge.

The book contains fifty-four photographs of Port Airport facilities and services. The photographs are Clyde Sunderland, Commercial and Photo View, Rich Muller, U. S. Navy, U. S. Army, Herrington and Ols R. L. Copeland, J. Walter Frates and Gwen Evans. T art work and layout are by William DuPont.

Maps and drawings are also included showing Master Plans being followed by the Board of Port Co missioners for both the Port and the Airport.

Book Review

THE ROPEMAKERS OF PLYMOUTH, by Sam Eliot Morison, published by Houghton Mifflin Co pany. Price $3.00

Here is the 125-year history of the Plymouth Corda Company, which has made everything from rope anch cables to specially designed ski tow lines. The auth presents a striking picture of a company which has su vived three great wars, five major depressions and ma financial panics, a company which has been in busin since before the days of the clipper ships. The author one of America's foremost seagoing historians, and has woven into his story the art and adventure of ro making. An 18-page appendix might be considered encyclopedia of knots and knot uses.

:ific Port Charges Absorbed

(Continued from page 53)

the cost of handling individual commodities at the :s in return for which they proposed to fully absorb loading and car unloading charges. Their premise that this arrangement would enable the transcontin- ıl exporter or importer to know just what the overall sportation cost via Pacific Coast ports would be. vever, the National Industrial Traffic League did not the idea and obtained suspension of the tariff sup- nents providing for these arbitraries, which had been lished to become effective February 1st. In view of r developments, the suspension proceeding never ıe to trial and was discontinued after the railroads celled the suspended tariff items last August.

n the meantime the report of the Western Transpor- on Conference was issued which again called attention the disadvantages suffered by Pacific Coast ports ough the accessorial charges and suggested that the riers should find a means of doing away with them and plifying the overall rate structure.

The basic agreement which has now resulted in solu- n of this problem was reached between the railroads l the Pacific Westbound and other Conferences in y, but many details remained to be worked out and ne very serious obstacles were encountered. Agreement ıld not be reached on the Hawaiian traffic. However, agreement does cover substantially all other trans- ific traffic. The Conferences participating, in addition the Pacific Westbound, are the Pacific Straits, Pacific lonesian, Pacific Coast Australasian and Latin Ameri- n, to the extent that the transcontinental export and port rates apply in connection with the member lines the latter conference. The Pacific Islands Transport ne, Union Steam Ship Company of New Zealand and eanic Steamship Company concurred individually on ne traffic. The details are not a matter of public record, t it is generally understood that the steamship lines pay r all of the car work and also pay for wharfage which stomarily is assessed against them anyway and then bill the railroads for their proportion.

The shipper is of course not directly concerned with e details of the arrangement, but he is now assured that can ship through Pacific Coast ports, without en- untering any nuisance charges. This is expected to re- ore considerable traffic to those ports and the carriers rving them and will undoubtedly have the effect of eating new traffic. The San Francisco Chamber of ommerce took the initial step in bringing this to the tention of the prominent shippers in the territory east the Rockies when letters were addressed to traffic offi- als or export managers of several hundred industries ver the signature of the Chamber's President, Paul A. issinger. The shippers were also advised that labor con- itions at Pacific Coast ports had become stabilized and at no interruptions of service through labor distur- ances were in prospect. The Chamber is creating a per- anent Port Promotion Committee and a staff to im- lement the Committee's policies. It aims to straighten ut a number of other problems at the Port of San Fran- isco and to restore the confidence of the shippers in the ort and its services.

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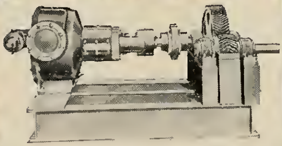

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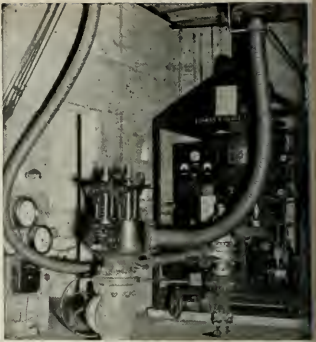

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Pacific Marine Supply Appointed By Snow-Nabstedt

Appointment of Pacific Marine Supply Company of Seattle, Wash., as its distributor for Washington, Idaho, Montana and Alaska has just been announced by A. T. Nabstedt, Jr., Director of Marketing and Asst. Treasurer of the Snow-Nabstedt Gear Corp. of New Haven, Conn., makers of Joe's and S-N Reverse and Reduction Gears.

The distributor arrangement includes warehousing of Snow-Nabstedt products and parts in Pacific Marine Supply's headquarters at Seattle. The entire line of Snow-Nabstedt hydraulic and manually operated reverse and reduction gears, power take-offs and speed reducers will be distributed through Pacific's affiliates in Hoquiam, Tacoma, Ballard, Everett, Bellingham, Marine Supply Stores plus travelling representatives in Alaska. Oregon Marine Supply Co., franchised distributors for Snow-Nabstedt in Oregon, are also affiliates. The addition of Snow-Nabstedt equipment complements Pacific Marine Supply's marine sales and service throughout the Pacific Northwest.

New Condenser Service Catalogs

Condenser Service & Engineering Company, Inc., Hoboken, N. J., has announced three new catalogs: Bulletin 102 on Steam Condensers; Bulletin S-50 on Pneumatic Sewage Ejectors; and a bulletin on Centrifuges. The bulletins are well illustrated with photographs and diagrams.

Conseco condensers feature deep water-boxes, wide tube spacing, outside steam belt, internal stiffening of tube sheets without the use of through stays, and quick-opening doors on water-boxes.

The Blackburn-Smith Pneumatic Sewage Ejector System is thoroughly described in Bulletin S-50 with the aid of many charts and diagrams.

The new CME Continuous Centrifuges extract solids from liquids, and separate immiscible liquids of unequal specific gravity at low cost. There are no filter elements to renew or service. Operation is continuous, uninterrupted, and fully automatic. The units are entirely self-contained and require little floor space. Two types of centrifuges, screen type and solid bowl type, are available in a variety of sizes to meet any requirement. Construction and operation of both types are illustrated on the schematic drawings in the bulletin on Centrifuges.

414 Ships Lost During Past Year

The world lost 414 ships totaling 858,661 tons in 1949, according to a summary published by Lloyd's Register of Shipping.

Ships of more than 100 tons, lost or condemned in consequence of casualty or stress of weather totaled 219 with 236,690 tons, while ships broken up were 195, with 621,971 tons.

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Safety Aboard Tankers

(Continued from page 39)

install equipment which permits the loading operation to be carried out without opening the ullage covers. Tanks are gauged visually through sight glasses, ullage pipes or by mechanical gauging devices. The gas and air mixture displaced from the tanks during loading is carried off through the venting system with which all modern tankers are fitted. In addition, deck sprinkler systems are fitted on vessels in this service to keep the temperature of the decks as low as possible in warm climates in order to reduce cargo vapor pressure.

Personnel Safety

A large majority of personnel accidents are due to unsafe acts and only a very limited number of unsafe conditions. The education of ships' personnel, therefore, is of primary importance. As a step in this direction, the practice of supplying the men who man the tanker fleets with a breakdown of the various types of personnel accidents can be recommended.

The following analysis of personnel accidents that occurred during the year 1949 on board the vessels comprising the largest tanker fleet under the American flag is submitted for illustrative purposes:

	%
I—Falls	36.2
II—Handling Objects	14.1
III—Handling Hand Tools & Galley Knives	8.6
IV—Striking against obstructions	8.6
V—Contact with hot or corrosive substances or hot surfaces	6.7
VI—Struck by flying objects (eye injuries)	6.3
VII—Struck by falling objects	4.6
VIII—Contact with moving machinery or equipment	3.8
IX—Struck or thrown by sea	2.5
X—Crushed by doors, etc.	2.1
XI—Miscellaneous	6.5
	100.0

Simplified statistics such as these can be readily posted on bulletin boards and provide good material for discussion at Ship's Safety Committee meetings. Further analysis can be given in the form of Safety Circular Letters for the use of the Ship's Safety Committee. Various types of personnel accidents and their principal causes can be described in these circulars, and recommendations made for minimizing them.

The high percentage of accidents due to falls, combined with the severity usually encountered in falls from gangways, led one company to study the problem at a terminal at which dock occupancy by tankers is almost 100%.

To minimize the hazards caused by a steep gangway angle, an experimental gangway platform was constructed at one dock. This platform was erected about eight feet above the dock floor and materially reduced the

(Continued on page 80)

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Safety Aboard Tankers

(Continued from page 79)

angle of the gangway when a tanker was in a light co dition. From this experimental installation, a permane platform with a retractable gangway has been develope

Procurement and maintenance of safety equipme applicable to tanker operations is a vital part of a safe program. In one fleet, the owner furnishes each vess with two fresh air hose masks, a resuscitator, a combust ble gas indicator, safety belts, and goggles as standar equipment. However, the mere providing of such equi ment is not sufficient. Maintenance of this equipment i good operating condition, instruction in its proper us and supervision to see that it is used when required a also essential.

A case of failure of supervision in one accident wi illustrate the last mentioned point. The forward bulkhea of the midships house of a vessel was being painted i port by a crew of three men working from a stagin Prior to coffee-time while the Mate was around the for deck, all had been wearing safety belts. However, wit no direct supervision after the break in work, one ma returned to the staging without his safety belt. Shortl afterward, the staging fell resulting in his death.

Special safety problems arise in the case of tankers e gaged in transporting specialty products or chemicals i bulk or, in certain trades, general cargo. Plans for th conversion of tankers to such services should be sub mitted to all concerned with safety for review to insur that necessary precautions are provided for safeguardin personnel. It should be the responsibility of the Safet Engineer and his associates to stipulate the addition equipment required for the protection of the crew an to prepare instructions for their guidance.

As an example, in the case of a tanker which had bee converted to transport part cargoes of aromatic solvent it was found that the combustible gas indicator supplie for use on vessels carrying the usual petroleum product was unsuited for the detection of this type of gas i dangerous concentrations. An indicator with prope range was procured and placed on this vessel. In anothe instance, the officers of a vessel carrying part cargoes o alcohol were warned that foam was not a suitable fir extinguishing agent for an alcohol fire. They were in structed that fog, CO_2 or steam smothering should b used if they were called upon to fight such a fire.

Some fatal accidents have been caused through th use of carbon tetrachloride as a cleaning agent. On on vessel the crankcase of a Diesel engine was cleaned wit this material and one of the men involved inhaled suffi cient vapors to cause his death some days after the ex posure. The owner decided that there were other clean ing jobs on vessels where sufficient quantities of carbo tetrachloride vapor could accumulate to cause simila accidents and a substitute cleaning fluid with less toxi properties is now being supplied.

Channels of communication between shore and shi are an extremely important part of any safety program A safety bulletin issued at regular intervals or a series o safety circular letters have great value in affording th master and the officers of each vessel concise informatio regarding safe methods and procedures. The development of a safe procedure on one vessel can be quickly brought to the attention of the entire fleet through the medium of a bulletin or circular letter if adequate attention is given to this aspect of a safety program. If a house organ is issued for seagoing personnel, safety messages over the signature of the executive officer of the company provide an excellent means of bringing to the attention of all seagoing personnel the fact that the management is behind the safety program.

The formation of Ship's Safety Committees has been mentioned many times as a fundamental part of any program for safety at sea. Safety Committee Meetings have been a feature of the Safety Program of my company for more than twenty-five years. Hundreds of excellent suggestions have been made by these Committees, and after review by shore side personnel, a great many of them have been approved and put into effect. These meetings afford ships' officers an excellent opportunity to observe and discuss any hazards which exist aboard their vessels and, in the minutes of the meetings, to recommend remedial action.

Any safety program should include a thorough investigation of all serious accidents to determine the causes so steps may be taken to avoid a recurrence. The findings of these investigations permit prompt elimination or correction of faulty equipment throughout the fleet. Disciplinary action can be taken when it develops that an accident was caused by negligence of any member of a vessel's complement.

No safety program would be complete without a Port Safety Committee comprising the Port Captain, Port Engineer, the responsible safety executives of the company and a member of top management. This Committee should discuss general problems relating to safety and establish policies for the guidance of all concerned. Recommendations for major structural alterations on vessels, changes in operational procedures, and the procurement of new equipment are proper matters for consideration by this Committee.

To summarize, the salient features of an effective safety program for tankers are as follows:

1. Top management must take an active part in safety matters.
2. Responsibility for safety work should be delegated in language that will not permit misinterpretation. The appointment of a Safety Engineer is desirable when a sizeable fleet of tankers is involved. The Safety Engineer should devote his entire time to making shipboard safety inspections, coordinating the work of the Ships' Safety Committees, investigating major accidents and handling allied matters.
3. Promotion of an active interest in safety on the part of ships' personnel should be accomplished through Ships' Safety Committees and educational programs.
4. Those responsible for safety should keep abreast of all developments involving improved equipment for the safety of ships and ships' personnel.

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Isthmian Line Selects New 16-Inch Radar

The Isthmian Steamship Company, 71 Broadway, New York, New York, has announced the purchase from the Raytheon Manufacturing Company, Waltham, Massachusetts, of 24 new 16" presentation "Mariners Pathfinder" radars to be immediately installed aboard its fleet of C-3 vessels.

At the completion of comprehensive operational tests on three representative vessels of the fleet, the *Steel Voyager*, the *Steel Chemist*, and the *Steel Age*, Isthmian Steamship Company stated: "The reports from our Technicians and the Masters of these three ships, show that the equipment has fully met our expectations. We have made an extensive study of radar systems, both 3 cm and 10 cm and find that there are advantages in favor of both systems. With equal size antenna reflectors, the 3 cm will give sharper definition or resolution, while the inherent behavior of the 10 cm wave length offers advantages that cannot be duplicated by the 3 cm wave length, particularly its conspicuously better performance in rain squalls and heavy seas, the increased dependability and economy of maintenance and the increased life expectancy of the equipment.

"The new Raytheon 16-inch "Mariners Pathfinder" with the 12-foot antenna offers all the advantages of the 3 cm equipment without sacrificing any of the 10 cm radar advantages. The results of our tests are such that we are now proceeding to equip the balance of our C-3 vessels with this new radar."

The Isthmian Steamship Company operates a fleet of 28 owned vessels, 24 of which are of the C-3 type, 12,000 deadweight tons average. Their operations extend to the Red Sea and India, Persian Gulf, Straits Settlements and Netherlands Indies, Hawaiian Islands and Philippines, Intercoastal, and Westbound Around the World.

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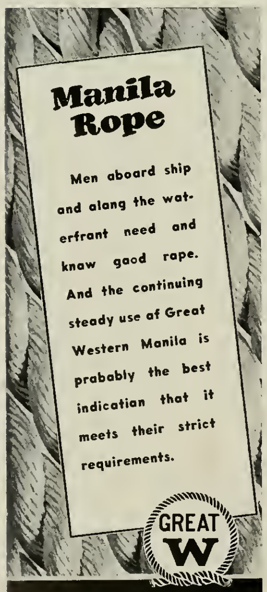

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Powerful Plug-in Searchlight

The most powerful portable Searchlight made has just been introduced by Unity Mfg. Co. of Chicago.

According to the company this power searchlight is the first of its kind to give the user all the advantages of 110 volt current in a hand held searchlight. Among its special features are its original high efficiency which is maintained indefinately; its low operating cost (consumes only 200 watts); its immediate availability by plugging in any light socket.

The full power of 110 volts gives this light tremendous distance and a brilliance which turns night into day at the flip of a switch. Tests show that it is possible to read a newspaper a mile distant from this light. The uses of the Unity Power Searchlight are limitless; farmers, mechanics, repairmen, mariners, resort owners, in fact everyone who has access to 110 volt current will find hundreds of uses for this new development in power searchlights. The Model No. 740 for 110 volts is approved by Underwriters Laboratories.

Plug-in Searchlight

It is also made for 6, 12 and 32 volt current and is provided with plugs for automobile and marine use.

Maritime Labor Relations*

(Continued from page 51)

it must never be made except in privacy to that man involved.

Do not permit your people to malign the man's union affiliation for he is justifiably proud of it and we know of no easier way to make an immediate and long lasting enemy. Our unions have every right to be proud of what they have accomplished. Organization became necessary because business grew so large the boss was too far removed from his employee and some supervisor ill-treated a human being who had no way of reaching a court of fair judgment; that is where his union entered the picture in his behalf.

All are proud of the fact that since December of 1948 there has been no major work stoppage under any Pacific Coast contract. There is every reason to look forward to a decade of progress. We have all learned our lesson the hard way and realize that no one has gained by our past actions.

We also have a very well organized mutual meeting ground in the Pacific Maritime Association and the meetings between the parties have been business-like with a definite indication of mutual respect and trust. On management's side we realize that no ship is any better than the men who are on board, and unions realize that a dead ship means a loss to their membership of many jobs.

In closing we feel that the word of Edgar A. Guest sums up the West Coast labor relations policy:

"A ship is made of heavy steel,
And countless things from bridge to keel.
But mark these simple words I pen,
The heart and soul of ships . . . are men."

---

* Paper read at Merchant Marine Institute, Baltimore, October, 1950.

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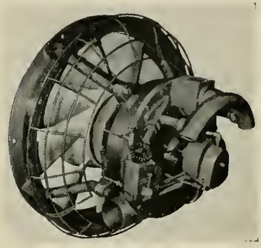
For oil burner applications they can be bolted directly to the front windbox without additional supports. They can also be furnished for vertical down discharge, or for cementing into boiler brick work. They are suitable for capacity regulation through speed variation, and can be furnished with voltrol vanes and constant speed governors for damper regulation. Capacities to 70,000 CFM or statics to 20″ H_2O.



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These Garlock packings and gaskets made of "Teflon" are unaffected by any acid and are highly resistant to all organic solvents and alkalies. They operate at temperatures from below -90° F. up to 500° F. and have high mechanical strength and a low coefficienr of friction within that temperature range.

Garlock produces several types of braided and molded "Teflon" packings for use on valves, pump rods or shafts and other equipment. For gasketing flanged joints of all kinds, including glass and porcelain flanges, Garlock envelope gaskets made of a suitable Garlock gasketing material encased in "Teflon" or gaskets made of solid "Teflon" are available in required sizes and shapes.

CQR Plow Anchors

A new six page brochure describing the latest model of the well-known CQR Plow Anchor has just been issued by The Maxim Silencer Company of Hartford, Connecticut. Profusely illustrated, this piece shows commercial and pleasure craft now using the CQR, as well as photographs taken during anchor tests. Also shown are the new Maxim Hawsepipe and specially designed Maxim anchor chocks. One page is devoted to practical hints on anchoring procedure.

"Remember there's nothing in the world that's impossible to accomplish."

Inevitable voice in the rear: "Ever try to push tooth paste back in the tube?"

Pacific MARINE REVIEW

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'Twas The Night Before Sailing

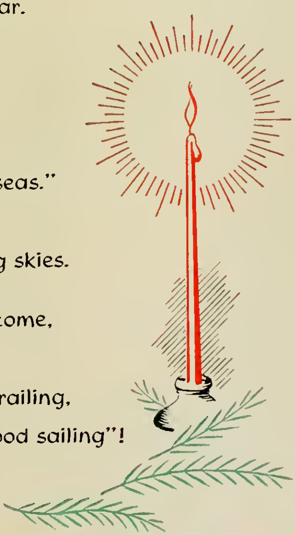
'Twas the night before sailing and all through the ship
The hatches were batten'd, all set for the trip.
The crewmen lay dreaming, tucked snug in their beds,
While visions of Christmas joys raced through their heads.

The skipper, alone, in his quarters sat writing
Of the passage so far and of happenings worth citing,
"Each journey we make, I'm more and more bound
That the Port of Long Beach is the best to be found.

Take for example, its bulk-loading conveyor,
Clear-span transit sheds, safe guidance by radar.
Yes, the service is fine, the facilities, too.
No bottle-necks here throw a ship over-due!

I can sail in and out with the greatest of ease;
Fifteen minutes from port and I'm on the high seas."
Then closing his log and rubbing his eyes
The captain looked out at the dawn-bright'ning skies.

With a shout to the mate and his crewmen to come,
He signalled below to make engines hum.
He shouted and smiled as he glanced o'er the railing,
"Merry Christmas, my hearties, and to all a good sailing"!



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Gray Clouds—

IF to pun a man's name is the lowest form of wit, it might also be said that a low form of patriotism is that which advocates the trading of American substance for the economic advantage of other lands. By "American substance" we mean the substance of Americans, and the man who seeks to becloud our maritime economy is Gordon Gray, Special Assistant to the President. The industry does well to scream.

First, however, the industry should do some soul-searching, and come up with a review of its habit of resting its case on national defense; for, as a matter of fact, that is just what the Gray report seems to do also. Whether it be new ships or old subsidies, we base our plea on defense; yet when the Defense Departments proceed to use the ships as they think wise, we trot out the specter of private enterprise ruination and demand that the government keep out. We can't play it both ways. As one of the most rugged of private enterprises, shipping should never have merited the stigma of "war industry". It is in every sense a "peace industry",—one of the industries on which the country and its continuing prosperity are founded,—and why it should be a prime target for the attacks of fleecy-cloud bureaucrats is something which even some leaders in the industry cannot understand. There are many explanations but two of them lead all the rest. One is lack of unity in the public relations approach, and the other is justifying itself as a defense industry. Gordon Gray, being a former Secretary of the Army, might have been influenced by the latter.

We are not going to worry too much about the Gray report, for we feel that there is little chance of its acceptance by the country as a whole, but the continued reflections on the industry are cumulative in effect and completely negate the efforts to correct inequities in its government relationships.

But back to the Gray Report. Practically, it is full of faults. In arriving at a certain conclusion faulty premises are used, as for instance where reference is made to "our traditional deficit" in shipping receipts. When the deficit is wiped out, we should, by some peculiar governmental reasoning, reincur it so as to protect foreign shippers. There seems to be some sort of criticism that there should be any balance in favor of American shipping. Another fault with the report is that it stops with 1949, whereas in one of its own tables (24) it shows a much different result for June 1950. Another fault is in lumping all countries together to reach a net total. We could point to many others, but they are fairly summed up in the attitude expressed in Point 18 of the Report which is the conclusion regarding shipping. Point 18 is simply:

"With respect to our shipping industry, we should limit the use of Government subsidies or other protective measures to the amounts necessary to maintain the operation of shipping facilities required for national security. The United States should negotiate with other governments to remove cargo preferences and other similar types of discrimination."

Shipping is shipping, just as railroading is railroading and trucking is trucking—and publishing is publishing. But shipping is in a class by itself in that *it is the channel through which we are supporting the world*. It's time the world—and our own government—quit sniping at us.

And it is time the shipping industry grew up and reasserted itself.

The 1950 Banquet.

Naval Architects' and Marine Engineers' Annual Meeting

Aspects of international conditions, both present and future, affecting the American Merchant Marine, were stressed in a speech made by Philip D. Reed, Chairman of the Board, General Electric Company, at the Annual Banquet of the 58-year-old Society of Naval Architects and Marine Engineers held at the Waldorf-Astoria November 10, 1950. Reed, long an international figure in industry and a keen student of foreign affairs, has always urged the development of American flag shipping as a means of expanding our foreign trade.

The banquet concluded the annual three-day business and technical sessions of the Society's members assembled from all sections of the country, and drawn from the shipbuilding and shipping industries, and affiliated trades. The annual presentation of awards to members was made at the banquet.

The banquet and technical sessions were presided over by John B. Woodward, Jr., retiring President of the Society, and President of the Newport News Shipbuilding and Dry Dock Company. Leading government officials and industrialists attended the dinner.

J. H. King, newly elected president of the Society.

The business session of the Council of the Society was held on November 8, followed by all-day technical sessions on November 9 and 10, at which time nine technical papers were read and discussed by the members. Two of the papers dealt with turbine propulsion machinery and boilers, while a third outlined lubrication and bearings for gears and turbines. Another discussed propellers and a fifth, by members of the David Taylor Model Basin, was on the motions of ships at sea. Fire tests made on passenger staterooms were described by a member of the United States Coast Guard, assisted by a private naval architect. The stability of ships when damaged was discussed by members of the Maritime Administration and the Coast Guard in a joint paper. Ship bottom corrosion was described in still another paper, while another dealt with design-stage calculations for ships. Digests of a few of these papers appear elsewhere in this issue.

Walter L. Green, a newly elected vice-president of the Society

King Becomes President

At the annual meeting of the Society J. H. King was elected President of the Society for a two-year term starting on January 1, 1951. King, who is Vice President of the Babcock & Wilcox Tube Company, succeeds John B. Woodward, Jr., President of the Newport News Shipbuilding and Dry Dock Company.

King has been a member of the Society for thirty years and a Vice President since 1942. He served as Secretary-Treasurer from 1939 through 1946, and as Treasurer in the years 1947-1948. He is the author of several technical papers read before the Society and has been very active in marine engineering developments affecting both merchant and naval vessels.

A graduate of Yale University and a member of Sigma Xi, King has been with the Babcock & Wilcox

Tube Company since 1914, having been appointed Manager of the Marine Department in 1931, and elected a Vice President in 1946.

He is a director of the Babcock & Wilcox Tube Company and the Hooper-Holmes Bureau, and is a member of the American Bureau of Shipping, the Newcomen Society, American Society of Naval Engineers, Propeller Club, Yale Engineering Association, Institute of Marine Engineers in London, and the North East Coast Institution of Engineers and Shipbuilders in England.

Other officers elected are:

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Abstracts of Naval Architects' Papers

Three of the papers read at the November meeting of the Society of Naval Architects and Marine Engineers are abstracted briefly on these pages. The complete papers are available.

The Backing Power of Geared-Turbine-Driven Vessels

This paper was read by E. F. Hewins of Newport News Shipbuilding and Dry Dock Company, and H. J. Chase and A. L. Ruiz of General Electric Company.

THE maneuver of stopping a vessel from full speed ahead is one that is always demonstrated on the trial run of a new vessel upon completion, but in most cases is very seldom used thereafter. Perhaps for this reason, and also for the reason that considerable preparation and time is required to conduct effective tests on a full size vessel, data on the performance of a vessel under these conditions ar not too plentiful. The specifications for the propulsion plant, however, contain many features which are closely related to the stopping performance of the ship. Perhaps the most important of these is the specification written for the astern torque and speed requirements for the main engine. These in turn may be reflected in special requirements for the condenser and its related auxiliaries. While these factors of themselves may be of relatively small magnitude, the trend toward faster, higher powered vessels and high initial steam temperature and pressure makes it worthwhile to attempt an analysis of the predicted performance from the standpoint of obtaining satisfactory maneuvering characteristics without burdening the propulsion plant with unnecessary requirements.

In order to obtain data during full-scale ship trials, the Newport News Shipbuilding and Dry Dock Company and the General Electric Company agreed to cooperate in making stopping tests on a vessel built by the shipyard and fitted with a propulsion turbine-gear unit built by General Electric. In order to obtain synchronized data, an oscillographic station was organized whereby measurement of the propeller shaft torque, thrust and speed together with the measurement of significant pressures in the turbines could be recorded on films.

Observations on the speed of the ship during the stopping period were made by the Dutch Log method, which was planned in detail to include features aimed at producing accurate ship speed data. Synchronization of the engine room and deck observations was obtained by relating all observations to signals given on the ship's whistle. A test program of 7 runs was planned in which the first four were stopping tests from rated speed ahead using four different values for the maximum steam pressure in the astern turbine steam chest. This produced the equivalent of four different ratings of the astern turbine. Two other runs were planned from approximately three quarters and one half of rated initial ship speed, in which run the full rated astern steam chest pressure, that is, rated astern turbine capacity, was used. The final run was a coasting stop from maximum speed ahead, in which the astern engine was not used and the vessel was allowed to decelerate under rhe effect of the hull resistance only.

The data have been analyzed principally with respect to the performance of the propeller, and the performance of the hull in terms of the hull resistance. Analysis of the propeller performance has been related to previously pubished data, particuary that of H. F. Nordstrom, and the analysis of the hull performance has been related to previously published data as well as to theory.

The authors have followed the practice of assigning variations berween the theoretical and observed propeller performance to variable thrust deduction, and in analyzing the hull performance resort has been made to an allowance of "virtual mass" or entrained water in order to develop better correlation between theory and observations with respect to the performance of the hull.

The astern thrust developed by the propeller was found to be somewhat higher than was anticipated. It also was apparent that there was no area in the curves where extreme cavitation or "breakdown" resulted in unloading the propeller and the turbine. It is interesting to note that in the coasting test the ship continued under way for more than half an hour, while in the tests from full speed ahead using astern power, the stopping time was in the order of seven to eight minutes even with a fairly wide difference in maximum astern power used.

Based on theory, and with constants deduced from the test data, the authors have developed equations from which predictions may be made of the stopping characteristics of a hull with a given astern turbine capacity. Curves have been prepared to illustrate and facilitate use of the equations, and suggestions made for selecting the basis for specifying astern power requirements.

Standards for Stability of Ships in Damaged Condition

This paper was read by Vito L. Russo of the Maritime Administration and James B. Robertson, Jr., of the United States Coast Guard.

THIS paper, which is concerned with intact stability necessary to withstand flooding is divided into three primary sections.

The first section briefly describes the background for the damaged stability regulations which were adopted

at the 1948 Safety At Sea Conference, and states the basic principle of these regulations—namely, that ships having a factor of subdivision of greater than .5 shall have sufficient intact stability to withstand the final stage of flooding of one compartment, and ships having a factor of subdivision of less than .5 shall have sufficient intact stability to withstand the final stage of flooding of two adjacent compartments. It also points out the possible critical nature of damaged stability requirements upon a ship's economic characteristics, as recognized by the 1948 Conference, and indicates the importance of full consideration of damaged stability in the design stage.

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Pictured at Naval Architects' sessions.

Top, left: Philip D. Reed, Chairman of the Board, General Electric Company, principal speaker at the annual banquet of the Society held at the Waldorf-Astoria Hotel, New York, November 10.

Top, center: The two newly elected 1950 Presidents of the two leading organizations in the maritime industry. Shown at left side of picture is Hugh Gallagher, who in September was elected President of the Propeller Club of the United States, and J. H. King, who was elected President of the Society of Naval Architects and Marine Engineers on November 10.

Top, right: J. Lewis Luckenbach, Chairman of the Board, and Walter L. Green, President, of the American Bureau of Shipping, pictured at the banquet.

Center, left: Hermann W. Lerbs, George P. Weinblum, Manley St. Denis.

◀ Center: The two immediate Past Presidents and the newly elected President of the Society of Naval Architects and Marine Engineers. Shown, left to right, in the picture are J. H. King, elected President on November 10, to take office January 1, 1951; his immediate predecessor, John B. Woodward, Jr., President during 1949 and 1950. At extreme right end of picture is Vice Admiral Edward L. Cochrane, USN (ret.), who was President during 1947 and 1948.

Center, right: Joseph W. Powell, a Past President of the Society and an Honorary Member; H. Gerrish Smith, Chairman of the Board, Shipbuilders Council of America, and a Past President of the Society; Vice Admiral Merlin O'Neill, Commandant, United States Coast Guard.

Bottom, left: Vito L. Russo and James B. Robertson, Jr.

Bottom, center: John E. Slater.

Bottom, right: J. B. Woodward, Jr., J. H. King, W. N. Landers and O. B. Whitaker.

Some Aspects of Ship Bottom Corrosion

This paper was read by Paul Ffield of Bethlehem Steel Company, Shipbuilding Division, Quincy, Mass.

THIS paper discusses the aspects of ship bottom corrosion of special interest to the shipbuilder and ship owner on both new ships and old ships where some of the bottom plating may have been renewed. It shows that normally the corrosion rate of hull steel is low but that damaging local corrosion in the form of pitting can occur on occasion. The causes of this pitting are discussed with particular emphasis on the stimulating influence of stray electric currents and galvanic currents due to the presence of mill scale. The stray currents are traced to welding operations when the vessel is outfitting and instances of mill scale corrosion are given dating back to the early days of steel ships. The characteristics identifying mill scale corrosion are discussed, and reasons are given why the usual safeguards of weathering, suitable bottom painting and frequent dockings sometimes fail to prevent its occurrence. Weathering has generally been relied on to remove much of the mill scale during the building period, but it is shown that the weathering characteristics of steel may change with rolling mill developments and at best this is not a reliable method of removing the scale in the comparatively short building period typical for modern shipbuilding. The presence of mill scale under the bottom paint is discussed both

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At Annual Meeting of the Society of Naval Architects and Marine Engineers, reading from top to bottom: A. L. Ruiz, E. F. Hewins, H. J. Chase, Eugene Panagopulos, J. F. Harvey.

Edwin E. Benzenberg, Archibald H. McComb, Paul Ffield, John T. Burwell, Jr.

Three recipients of awards and honors at the Meeting. Arthur R. Gatewood, Chief Engineer Surveyor, American Bureau of Shipping, who received the President's Award for 1950. Captain Harold E. Saunders, USN (ret.), who received The David W. Taylor Medal for notable achievement in naval architecture, and Henry C. E. Meyer, Chief Engineer of Gibbs & Cox, who received the "Captain Joseph H. Linnard Prize." At the extreme right is J. H. King, newly elected President of the Society.

J. H. King (left) and Joseph W. Powell (extreme right), a Past President of the Society and an Honorary Member, pictured with three of the recipients of 50-year Membership Certificates awarded at the Meeting, Archibald M. Main, Vice Chairman of the Board, Bath Iron Works Corporation; Charles W. Buckelew, retired, formerly with Ashton Valve Company; Frederick D. Herbert, President, Kearfott Company.

The Port of Long Beach

Major Features of the Port

- A debt-free port
- 40′ to 50′ depth of water in all channels
- Wide slips and channels
- Space to operate — congestion free
- Wide apron wharves
- Modern transit sheds of steel and concrete, clear span construction
- Canopies over loading platforms
- Fire-resisting construction
- Port-owned belt line railway system
- Ample railway classification yards in and adjacent to the harbor
- Modern street and yard lighting
- Underground utility lines throughout the Outer Harbor area
- Center of trade area of 4,000,000 people within a radius of 50 miles
- A $100,000,000 development program under way which will provide the world's most modern port facilities

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The Port That Built Itself

By W. R. MARTIN

President, Long Beach Board
of Harbor Commissioners

W. R. Martin

MOST public service projects of first magnitude, such as ports, are supported heavily by the taxpayers' money, but the Port of Long Beach is unique in that it is paying for its own growth in its entirety. It serves the taxpayers, provides for their payrolls and all the while

◄ The Port of Long Beach, City of Long Beach in background.

is growing into a bigger and better asset from its own natural resources.

The port is outstanding in the histories of the world's great harbors in that (1) at an early stage it has retired all moneys previously invested in its initial development, (2) it is continuing that development with revenues derived from itself and (3) it is entirely man-made, both as to land facilities and the breakwaters themselves which protect it. It is a deep water open-roadstead harbor offering direct access to the largest ships rather than a land-locked basin requiring tugs and careful maneuvering. It improves upon nature's land-locked bays in that it can be readily adapted to the changing needs of the shipping world. All of this has been created by man and through his individual enterprise rather than by state control.

Ports contributed greatly to our victory in the last war and are essential to our national defense at all times. In peacetime they serve as the modern gateway for the passage of ships of trade and travel, giving opportunity for the spread of democratic principles throughout the world.

The destiny of the Port of Long Beach as a major harbor was determined so long ago that it would be impossible to date the exact beginning. The plan was first laid in the shale and sand strata deep on the floor of the ocean where minute marine life lived and died, falling layer on layer and thereby accumulating the masses of pliocene and niocene formations which after an immeasurable time of pressure and heat became the black gold which has made possible the building of the harbor. No other harbor in the world has been provided with so rich a revenue for its unstinted development.

It is indeed fortunate that this great wealth was so located that it can be used for the good of a great nation. Surely nothing contributes more to the economic welfare and the national security than do the ports of this nation and it is for this purpose that the oil moneys are being used.

Early History of the Port

By ALVIN K. MADDY

Executive Secretary, Port of Long Beach

THE history of the Port of Long Beach, the newest major port on the Pacific Coast, dates back to 1542 when Juan Rodriguez Cabrillo, a Portuguese sailing under the Spanish flag, sailed up the West Coast of Mexico, discovered the Catalina Islands and sailed into what is now known as San Pedro Bay but which he named "Bahia de Los Fumos" because of the numerous smokes which he saw surrounding the bay. The smokes, it is now known, were caused by the Indians burning off the grass of the plains during one of their rabbit drives.

The next known ship to enter the bay was in 1602, just 60 years later, when Sebastian Viscaino, a Spaniard sailing under the Spanish flag, entered the bay and, not knowing that it had previously been named by Cabrillo, called it San Pedro Bay, after the saint whose day it happened to be. This was four years before the colony of Jamestown was founded in Virginia. It was Viscaino who gave many of the bays and promontories of the Coast of California their present-day names.

Alvin K. Maddy

It was not until 1805 that the first cargo ship, the *Leila Byrd*, entered San Pedro Bay bringing in spices and merchandise from Boston and taking out a cargo of hides and minerals from the desert mines of California and its neighboring states. At that time it was necessary to anchor the *Leila Byrd* offshore and bring the cargoes in small boats to what is now known as Point Fermin, where they were carried through the surf and hoisted over the bluff. The land area now comprising the Port of Long Beach was at that time a dismal swampland and could not be used for handling cargoes. Later on, merchandise was lightered through a winding channel around Deadman's Island several miles inland to a landing at Wilmington, which was located near the point where the Catalina Terminal now stands. In those days wagon trains hauled the cargoes from what is now the Port across the Colorado desert to the mines of Arizona and returned with the minerals which were to be exported. The experiment was even tried of substituting camels for wagons, but this was a failure.

Richard Henry Dana, in his noted book, "Two Years Before the Mast," describes a visit to this Port in 1835. At that time the only building in this region was a small adobe hut used for the storage of hides and for men to sleep in when they came to the landing from the interior. This structure stood where the Fort MacArthur barracks now overlook the harbor and the nearest ranch house was three miles away. Dana describes this as the most lonely and desolate spot on the California coastline.

During the first decades after the discovery of the Bay, its progress as a port was almost at a standstill. Only occasional ships entered the Bay, usually for the purpose of bringing merchandise and various goods to the missions which had been established and to take away the hides for which they traded. One of the original activities was smuggling, which became quite widespread. Cargoes were unloaded on the Catalina Islands and were smuggled at nightfall from the Islands to the mainland.

There was very little development of the Port of Long Beach itself until 1906, when the Los Angeles Dock and Terminal Company, a private corporation which had acquired title to 800 acres of lagoons, tidal sloughs and salt marshes in the lowlands at the westerly portion of Long Beach for a reputed price of $500,000, commenced the development of a private harbor. This locality is now known as the Inner Harbor of the port. The Los Angeles Dock and Terminal Company had obtained permission from the War Department to dredge certain navigable channels and were successful in compelling the San Pedro, Los Angeles and Salt Lake Railroad Company to remove a trestle and dam which the railroad company had placed across the old San Gabriel River at its outlet into the Pacific Ocean. This outlet was to become the Entrance Channel to the Inner Harbor.

A 180-foot bascule bridge, which provided the Port

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1950 Development of the Port

By R. R. SHOEMAKER

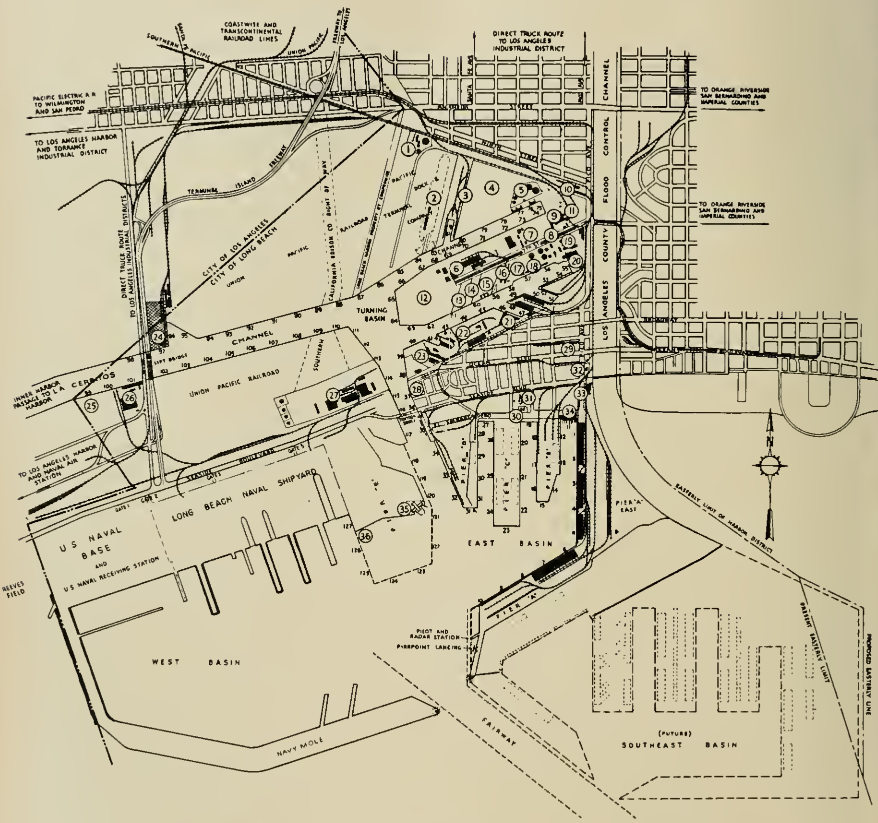
Chief Harbor Engineer, Port of Long Beach

THE Port of Long Beach during the current calendar year is still maintaining its position as the fastest growing port on the Pacific Coast and "America's Most Modern Port." The necessity for expansion of the port seaward into San Pedro Bay involves construction of all facilities in deep water and necessitates the creation of new land before additional port facilities can be developed. The current year has been devoted largely to the creation of such land areas. The largest single project undertaken and financed by the Port was the second unit of Pier A East fill, which consists of 136 acres of hydraulically filled land retained behind rock and earth dikes and behind circular cell steel bulkheads. The 2800 odd linear feet of circular cell steel bulkhead was designed to serve the purpose of properly retaining the fill against loss of material into deep water but is also the foundation for a future 4-berth deep water modern cargo terminal with relatively little additional expense. The

R. R. Shoemaker

cost of this 136-acre project, exclusive of surface improvements which have yet to be installed, was approximately $4,500,000. The Port is now proceeding with grading operations, surfacing and paving of some parts of the area, the development of street subgrades and the installation of utilities.

In addition, two of the drilling and operating contractors undertaking tideland oil development for the City are currently either planning or actually constructing the pipe lines, foundations, tank farms, well cellars, etc., preliminary to an intensive additional oil well drilling campaign. The areas as they become available are


COASTWISE AND TRANSCONTINENTAL RAILROAD LINES
SOUTHERN PACIFIC
SANTA FE
UNION PACIFIC
FREEWAY TO LOS ANGELES
DIRECT TRUCK ROUTE TO LOS ANGELES INDUSTRIAL DISTRICT
PACIFIC ELECTRIC R R TO WILMINGTON AND SAN PEDRO
TO LOS ANGELES HARBOR AND TORRANCE INDUSTRIAL DISTRICT
TO ORANGE RIVERSIDE SAN BERNARDINO AND IMPERIAL COUNTIES
TO ORANGE RIVERSIDE SAN BERNARDINO AND IMPERIAL COUNTIES
LOS ANGELES COUNTY FLOOD CONTROL CHANNEL
TERMINAL ISLAND FREEWAY
DIRECT TRUCK ROUTE TO LOS ANGELES INDUSTRIAL DISTRICTS
CITY OF LOS ANGELES
CITY OF LONG BEACH
UNION PACIFIC
CALIFORNIA EDISON CO RIGHT OF WAY
PACIFIC TERMINAL RAILROAD COMPANY
DOCK 6
CHANNEL
TURNING BASIN
CHANNEL
LIFT BRIDGE
INNER HARBOR PASSAGE TO LA CERRITOS HARBOR
UNION PACIFIC RAILROAD
SOUTHERN
TO LOS ANGELES HARBOR AND NAVAL AIR STATION
SEASIDE BOULEVARD
GATE 1
GATE 2
GATE 3
GATE 5
LONG BEACH NAVAL SHIPYARD
U S NAVAL BASE AND U S NAVAL RECEIVING STATION
REEVES FIELD
WEST BASIN
NAVY MOLE
PIER "D"
PIER "C"
PIER "B"
PIER "A" EAST
PIER "A"
EAST BASIN
PILOT AND RADAR STATION
PIERPOINT LANDING
FAIRWAY
(FUTURE) SOUTHEAST BASIN
EASTERLY LIMIT OF HARBOR DISTRICT
PRESENT EASTERLY LIMIT
PROPOSED EASTERLY LINE
BROADWAY
N

Legend

1. L. B. Municipal Gas Plant
2. United Concrete Pipe Corp.
3. J. H. Baxter & Co.
4. J. D. & A. B. Spreckels Co.
5. Richfield Oil Co.
6. Proctor & Gamble
7. L. B. Marine Repair Co.
8. Golden State Sea Food Co.
9. California Sea Food Co.
10. P.E. - S.P. Freight Station
11. A.T. & S.F. Freight Station
12. Southern Pacific Railroad
13. F. P. Newport Co.
14. Title Insurance Trust Co.
15. F. P. Newport Co.
16. Graham Bros., Inc.
17. Sully Miller Contracting Co.
18. Richfield Oil Co.
19. Harbor Dept. Supply Yard
20. Southern Pacific Canning Co.
21. Standard Gypsum Co.
22. Craig Shipbuilding Co.
23. West Coast Packing Co.
24. Ford Motor Co.
25. Fellows & Stewart
26. Spencer Kellogg & Sons
27. So. Calif. Edison Co.
28. Harbor Dept. Supply Yard
29. Union Pacific Freight Depot
30. Long Beach Harbor Dept.
31. L. B. Oil Development Co.
32. Richfield Oil Co.
33. Army & Navy YMCA
34. Navy Landing
35. Hughes Aircraft Co.
36. Guy F. Atkinson

M. W. Daubney, Vice President, Long Beach Board of Harbor Commissioners

R. D. Elliott, Secretary of Board

Emmett M. Sullivan
Long Beach Commissioner

John P. Davis
Long Beach Commissioner

quickly being adapted to material yards and open storage activities of both shippers and contractors. The unit fits into the over-all comprehensive plan of the Port and is partially the site of the proposed operations of the Pacific Coast Steamship Company, specialized coastwise service between San Francisco and Long Beach. It will be recalled that this service necessitates parking space for upwards of 200 trucks and trailers in the immediate vicinity of the ship berth.

The outer portion of the 136-acre fill is being developed for a long range sport fishing terminal and seafood cafe combination, which upon completion should prove to be one of the most attractive public sport fishing

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Port Cargo Operations

By E. F. MANNING
Traffic Manager, Port of Long Beach

THE movement of cargo since January, 1950, in and through the Port of Long Beach until the advent of the Korean situation tended to show a slight decrease in dry cargo movements for corresponding periods in 1949. Since June, 1950, dry cargo movements have increased sufficiently as of today, to bring the over-all yearly average to practically the same as last year at this time.

As this is the time California grown cotton begins moving to world markets, plus an expected increase in the flow of military cargoes, it is believed that by the end of the calendar year, the total dry cargo movement will reflect an increase over the 2,500,000 tons registered last year while the total cargo movement will substantially exceed 6,000,000 tons.

The movement of petroleum products through the Port reflects the recently stated assertion by R. L. Mincklin, president of General Petroleum, that the State of California is supplying 56% of the military require-

E. F. Manning

ments with only 16% of the country's total production.

Each month of this year has shown a substantial increase in the export of petroleum products over the corresponding months of 1949. The total increase as of November 1, 1950, approximates 800,000 tons.

The physical operation of the Port has presented some problems in the handling of cargo in the Port operations due to the immense new construction and subsidence remedial program which continues ahead with full speed. At present, a new transit shed, 896′ x 200′ with 180,196 (4.17 acres) square feet of covered floor space is under construction at Berths 8, 9 and 10, Pier A. The completion of this shed will alleviate to a great extent the somewhat congested operations experienced at Pier A.

In addition to the new transit shed at Berth 10, an umbrella type warehouse is to be constructed immediately in the back area of Berth 5, Pier A to handle an expected increase in the movement of cotton. Last year the harbor handled better than 67,000 tons which is roughly 270,000 bales, and it is hoped the total movement for this calendar year will exceed 350,000 bales.

In June, due to the heavy increase in the movement of military cargoes, the management found it necessary to move the Army Terminal operation from Berth 50, Inner Harbor, to the area occupied by Calmar Steamship Corporation, Interocean Steamship Company and States Line at Berth 7, Pier A. This of course necessitated a major shift of operations for several companies other than those listed. At the present time, operations are once more proceeding more normally although they are somewhat congested at times.

One action which can be directly attributed to the shift of the Calmar operations from Pier A to Inner Harbor was the decision of the management to hasten the plans and preliminaries for the erection of the new transit shed at Berths 52, 53 and 54, Inner Harbor. Although this shed has been in the comprehensive

18,000 tons of newsprint assembled in north one-half of Berths 6-7 transit shed. This 1152 ft. x 200 ft. clear span transit shed is world's largest.

development plan, there had been no urgency attached to its immediate construction until the shift of Calmar operations to that area. Due to the type of terminal operations required by Calmar, the type construction contemplated plus the availability of three deep sea berths will more than fill the necessary requirements.

The Tidelands and Long Beach

By E. J. AMAR

Port Manager, Port of Long Beach

WITH the facilities that grew on oil producing land, the port of Long Beach annually accommodates better than 1200 large merchant ships and hundreds of fishing boats and military vessels, not counting a growing number of waterfront industries which process both imported and domestic raw materials that go into the channels of world trade and provide work for thousands. It is estimated that port activities provide work for a least 14,000 persons.

While the port was first financed by bond issues, a total of $8,245,000.00 in port bonds having been voted by the Long Beach electorate prior to the discovery of oil, the real impetus to the port's developments began with the proceeds from the port's tideland oil wells.

The harbor lands upon which these tideland oil wells have been drilled were granted to the City of Long Beach by the State of California in 1911, subject to certain conditions and trusts which limited the use of the lands for harbor purposes. Later statutes were adopted in 1924 and 1925 which provided that the lands could be used for public parks, highways and playgrounds located on these grounds.

The Supreme Court ruled in 1938 that Long Beach could drill for oil but that the basic purposes of the trust should be considered first. In 1948 the same court ruled that the revenues from the harbor land were restricted for the purpose of the original grants and prohibited the expenditure of such moneys for general city purposes.

Until the tidelands in the Long Beach area developed into million-dollar oil producing lands, there was no tidelands issue. But now certain interests have sought governmental control of the oil-bearing area so that exploitation can be carried on without city control.

Fifty-two times previously the United States Supreme Court had held that tidelands belonged to the states and not the federal government.

Yet, in the most recent ruling by the high tribunal, on June 23, 1947, it was held that the government had "paramount rights over the three-mile marginal sea starting at low tide line, and outside inland waters, starting at their seaward boundary."

That decision is what has held the tidelands issue in the air for more than three years and has caused Long Beach to impound more than $50,000,000 pending settlement.

E. J. Amar

The Supreme Court is not the only source of opposite decisions. Harold Ickes, as Secretary of Interior, did the same, city officials point out.

In December, 1933, Ickes wrote in reply to a petition by Dr. O. S. Proctor of Long Beach: "The settled law provides that no right can be granted to you . . . to the bed of the Pacific Ocean either within or without the three-mile limit. Title to the soil under the ocean, within the three-mile limit, is in the State of California and the land may not be appropriated except by authority of the state."

Yet in 1936, C. A. Weigel applied for a federal oil lease on land off Huntington Beach. It was the same type of lease the Interior Department repeatedly had rejected, officials said. Ickes failed to deny the petition and said it was a matter for the courts to decide. There was an immediate rush of filing for the rights to the tidelands.

It was in 1945 when Ickes threatened to issue some oil drilling leases to cover local tidelands that a quitclaim bill was introduced in Congress, designated to give to the respective states and their grantees full title to the tidelands.

House and Senate passed the bill (79th Congress) but President Truman vetoed it.

In October, 1945, the U. S. Government filed suit against the State of California, declaring that the state had issued drilling leases on tidelands which were owned by the federal government and therefore the state had trespassed upon federal property. The suit was heard by the U. S. Supreme Court.

Meanwhile, the quitclaim bill was rewritten and submitted to the 80th Congress in the spring of 1947. It passed the House, 257-29.

On June 23, 1947, the U. S. Supreme Court ruled in the California case that the government had "paramount rights" over the three-mile marginal sea, starting at the low tide lines, and outside inland waters, starting at their seaward boundary.

(No seaward boundary of the waters was announced, nor how to determine such.)

On July 26, 1947, City Attorney Irving Smith obtained from the then U. S. Attorney General Tom Clark the famous stipulated line.

This was a line drawn from Point Fermin to a point at the foot of Gaviota Avenue. This was agreed upon by the Justice Department as the seaward boundary of San Pedro Bay. (This line never has been adjudicated by the U. S. Supreme Court.) Within this line is the major tideland oil development in which the city is interested.

Justice Felix Frankfurter, one of the dissenting justices, wrote: "The decision enunciates a theory of appropriation which is capable of undermining the whole concept of private property in America . . . "

He pointed out that if the government has "para-

Municipal Piers 1 and 2, Long Beach Inner Harbor. Procter & Gamble plant in background.

Portion of Pier A showing Port's new steel and concrete transit sheds.

mount rights" and "full dominion" over tidelands where national defense is concerned, therefore why should it not have "paramount rights" and "full dominion" over uranium, or steel, the Mesabi range, the boats and railroads that transport iron ore; why not indeed by the

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The Harbor Oil Field

By M. D. HUGHES

Chief Petroleum Engineer,
Port of Long Beach

M. D. Hughes

THE story of petroleum activities in the Harbor District begins in 1936 when the General Petroleum Corporation, having completed a seismograph survey with favorable indications and having obtained leases in the area, completed their "Terminal" No. 1 well, from which the Terminal Zone was named, just west of the

Long Beach City limits and north of Cerritos Channel. A production of 1400 barrels per day was obtained from this well at a depth of 3625 feet.

Following the completion of this discovery well, drilling activity increased rapidly both in the town lot area of Wilmington and on the large Union Pacific and Ford leaseholds just west of the Long Beach City boundary. However, due to restrictive ordinances in effect, it was not until November of 1937 that areas within the Long Beach City limits were opened up for drilling, and these areas were limited to that portion of the City lying westerly of the Los Angeles River Flood Control Channel. Inasmuch as the City of Long Beach occupied the tidelands within the Harbor District by virtue of a grant from the State of California made in 1911 and amended in 1924 and 1935, there were many legal technicalities to overcome before the first City-owned well could be drilled and it was not until March 8, 1938, that the first City-owned well was brought in. This was Westgate Greenland Well No. A-3.

On March 15, 1939, the City of Long Beach, acting through its Board of Harbor Commissioners, entered into four drilling and operating contracts with the Long Beach Oil Development Company for the drilling of Parcels W, X, Y and Z. The lands comprising these parcels were all tidelands. Later, on January 2, 1942, (Parcel Z-1) and August 3, 1944, (Parcel J), additional contracts were entered into with the Long Beach Oil Development Company covering the development of Parcels Z-1 and J, which are also tideland properties. Under the terms of these contracts, the City receives a minimum royalty of 30% from the production of the wells until the costs per parcel of drilling the wells have been reimbursed, after which the City receives 85.55% less the actual cost of production of the wells. The Long Beach Oil Development Company is reimbursed for the actual cost of drilling the wells, which cannot exceed $27.50 per foot for straight holes or $30.25 per foot for directionally drilled wells. They are also reimbursed for actual production costs which cannot exceed $250.00 per month per flowing well or $500.00 per month per pumping well.

In March of 1947, a joint contract was entered into by the City of Long Beach and the Board of Harbor Commissioners with the Richfield Oil Corporation. This provides for the development of 245 acres of tidelands lying east of the Harbor District and south of Seaside Boulevard from drill sites located in the Harbor District on Pier A East. This contract is even more advantageous to the City inasmuch as it provides that the City will receive a minimum royalty of 60.1% from production until Richfield Oil Corporation is reimbursed for the actual cost of the wells, after which the City will receive 94.1% royalty less the actual cost of production. The actual cost of drilling and producing the wells is limited as in the case of the Long Beach Oil Development Company contracts.

As of November 15, 1950, the Harbor Department, acting for and on behalf of the City of Long Beach, owned and operated 533 oil wells which had been drilled by the Long Beach Oil Development Company and 77 oil wells which had been drilled by the Richfield Oil Corporation, all of those wells being tideland wells. The total rate of oil production as of that date from the wells drilled by the Long Beach Oil Development Company was approximately 51,000 barrels per day and from the wells drilled by Richfield Oil Corporation was 11,000 barrels per day, making a total daily production from the port's tideland oil wells of 62,000 barrels.

In addition to the tideland wells, the City owns or has an interest in 78 upland oil wells with a daily production as of November 15, 1950, of 6,900 barrels. These wells have been drilled by various operators, including Signal Oil and Gas Company, Superior Oil Company, D. D. Dunlap Oil Company, Sound Petroleum Corporation, General Petroleum Corporation, The Termo Company and Westgate-Greenland Oil Company, and the

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Derrick-studded view of Long Beach Harbor skyline.

Radar and Its Practical Application

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and COMMANDER LOREN E. BRUNNER, U. S. Coast Guard

A FEW years ago the advent of radar in the Merchant Marine was hailed as a great aid to collision prevention but a number of collisions have since occurred which involved one or both ships equipped with radar.

Consequently there has been considerable discussion in various maritime publications about radar as a collision prevention device. Some of these discussions have been from the legal viewpoint and have concluded by blaming the accidents largely on "the technical limitations of radar" or "the human equation." Perhaps these conclusions are correct but radar is in itself only a professional tool and so long as collisions take place in clear weather it cannot be expected that radar will eliminate all collision hazards under conditions of poor visibility.

In observing the use of radar on the bridge (both on the largest ocean greyhounds and on the smallest yachts carrying radar), I have been frequently surprised and impressed to learn that many radar users have serious misconceptions regarding the technical characteristics of radar. These could possibly account for certain accidents which have occurred. To get the most from any navigational tool it is important to understand the elementary technical limitations and characteristics of the device. These things are too often taken for granted by the designing engineer and technical man and it is sometimes overlooked in the design of the radar that they can be very important considerations to the user if he is expected to apply the tool effectively.

Perhaps the "human equation" and the "technical limitations" need to be geared together a little better. A simple illustration can be taken from the art of flying. It has now become generally recognized that in teaching this particular art it is of prime importance that the airplane pilot have a clear physical concept of the primary technical principles involved. Almost every layman who aspires to fly has the original concept that the airplane throttle controls the speed and that the elevator controls the rate of ascent or descent. Actually the reverse is true—if you want to know why you must try flying an airplane—if you want to do it successfully you must understand this basic principle which is diametrically opposite to that governing the control of land or waterborne vehicles where the wheel or rudder controls space direction and the throttle controls speed.

In using radar it is likewise very easy to make false assumptions regarding the technical characteristics of the equipment. If it is to be used effectively as a collision-prevention device the user must have a clear mental picture of how radar collects information and how it transforms it to a visual presentation. For instance, just because the radar viewing screen presents the navigator with a "plan" view it does not mean that the radar collects information and presents it in a form which will directly compare with the "plan" view provided on a chart with which the mariner is so familiar. Since any surface obstruction which in itself is a target may in turn blank out all targets on the same azimuth at the same or greater ranges, the radar actually obtains a profile view and presents it in "plan" form. A concrete instance of this is a bridge. The piers under the bridge, boats underneath the bridge, or any piling or similar obstruction may be completely obscurred by the bridge directly overhead. Further, targets way beyond the bridge may be completely blocked out if they happen to be in line with the bridge piers, boats under the bridge, or similar obstructions. The latter is an instance of a hazard, which is itself unseen, completely masking other hazards on the same azimuth. There are still other frequently unseen radar hazards in particular which the user should always bear in mind for the reasons explained following, such as ice floes or small bergs, small craft in heavy seas, small buoys, etc. Before going into the reasons why these targets are unseen, a little reflection on these simple technical characteristics of a radar will lead any prudent pilot to decide that in using radar he should:

(a) Always rely on targets that *are seen* on the radar scope.

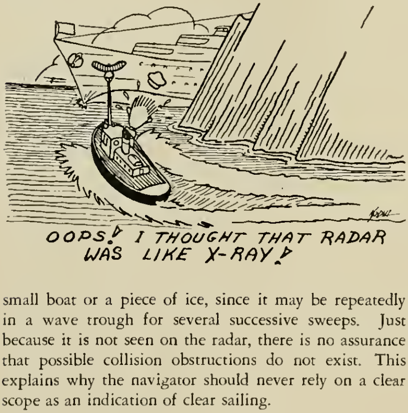
(b) Never rely on what *does not appear* on the radar scope as an indication of freedom from collision hazards.

Now, if the navigator is going to make proper use of a radar, just as in the case of flying an airplane, he must first form a clear mental picture before trying to use this particular tool. Let us look at the fathometer which is pretty well understood by most navigators. This particular device throws a short sound burst to the bottom and measures the time for the sound to leave the ship, hit the bottom, and return to the ship. The time scale is then directly calibrated in terms of fathoms. Similarly, a radar throws a high-powered short radio-signal burst at an object, measures the time for the radio signal to arrive at the object and return as an echo and has a time scale calibrated directly in miles. However, in order to scan the horizon completely around the azimuth these radio-sounding signals are sent out at a rapid rate of about 800 pulses per second in a concentrated stream and this stream is swept around the horizon about 10 times a minute.

Now that this first mental picture is clear, the navigator can make a simple interpretation of some of the technical aspects of radar in collision prevention:

(a) Radar can penetrate fog and most rain squalls, snow, and similar physical barriers to a much greater distance than the human eye. Therefore, if you see a target on a radar and then look out of the bridge and cannot see the target with your eyes, trust the radar rather than your eyes. The target may be just inside a fog bank where the radar can see it and your eyes cannot. This explains why to believe the targets that are seen on your radar, rather than your eyes.

(b) Since the horizon is swept only about 10 times a minute, it is very easy to miss a small target such as a small boat or a piece of ice, since it may be repeatedly in a wave trough for several successive sweeps. Just because it is not seen on the radar, there is no assurance that possible collision obstructions do not exist. This explains why the navigator should never rely on a clear scope as an indication of clear sailing.



OOPS! I THOUGHT THAT RADAR WAS LIKE X-RAY!

(c) Next, the size of the target indication on the scope depends more on the quality of the object as a radar reflector than on its physical size. For instance, a nun buoy with its sloping cylindrical surface reflects much of the radar signal up into the air from the sloping top and much of the remainder of the signal is scattered around the horizon from the cylindrical sides. A broadside flat metal upright sheet of the same size would be much more conspicuous as a radar target because it reflects much more signal.

(d) Since the radar operates by throwing out signals horizontally any hill or high point will show up clearly, but all obstructions behind it will be obscured. Beware the big ship target, breakwater or other large mass lest a smaller one be obscured behind it anywhere out to the horizon. Keep a clear mental picture—the scope does not give a complete and true plan view of all targets —it only shows the profile outline of the nearest targets. This explains why the ship on the other side of the bridge may be completely unseen if it is behind a bridge pier which in itself may show no indication on the radar scope.

(e) Ordinarily the surface of the water itself reflects very little signal back to the radar when the sea is calm but when the sea roughens up the broken surface itself becomes such a good target that large areas of scope patterns register an effect called "sea return" which can be so dense as to obscure a large ship target close by. There are means of controlling this effect which will be described later but beware the "sea return" which may conceal a much more dangerous object than mere rough water.

(f) In the radar sounding process it is necessary to use some practical means of probing with a fairly concentrated stream of signals or the echo would have no definite width. This is done with a special antenna to squirt the signals in a stream about 2° wide, since this is possible with a reasonable compromise in antenna size and cost. However, a 2° wide signal stream can only define two separate targets that are more than about 2° apart. Beware of the single target on the scope that may turn out to be one or several possible collision targets.

(g) In the process of depth sounding with a fathometer it is necessary after throwing out each signal to be silent for a moment in order to catch the echo, or the reflected signal would be masked by the outgoing signal. In a radar this same method is applied by chopping off the signal into very short blasts. The length of each of these blasts will determine the depth of the target shown on the scope. Certain technical difficulties limit this characteristic shortening to not much less than one-half microsecond. The resulting display on the scope can therefore only discriminate between targets about 100 yards apart in range unless they are separated in azimuth by the 2° described above. Beware of the two targets which are so close together in range that they appear as one, such as a buoy and a small boat, either or both of which may finally resolve into potential collision targets. This case explains the unseen boat or pier under the bridge which cannot be detected because it has less than 100 yards difference in range from the bridge itself.

(h) In the art of visual piloting most navigators are so accustomed to looking for a lighthouse or artificial navigational aid that they will automatically ignore a natural land mass which is a better radar target. In using the radar a large land mass may show up well and the lighthouse or daymark may be unseen. Therefore in laying down bearings from the radar scope the navigator must keep this fact in mind. Likewise the long ship with the high stern housing and low forward structure

may have a considerable difference in bearing between the actual bow of the target and the radar indication, especially in close quarters.

(*i*) Controls on radar like any other controls are provided to permit the user to obtain much better performance from the instrument than would be possible without such controls. The most used control is that called receiver gain or sensitivity. Radar like the human eye has its limitations if subjected to extremely large signals or glare effects. The sensitivity control and others described later can largely counteract these limitations if properly used. The sensitivity control is roughly comparable to the squint of the human eye. Beware of squinting the radar so badly that its eye becomes shut. Nevertheless this control has special and real value in sharpening the received signal beam so that fine targets can be separated and also to enable better discrimination of targets inside of heavy rain squall areas. A radar with the sensitivity control turned down too far gradually becomes more blind to the distant targets and later those closer in, especially the smaller targets. Another control called sensitivity time control (STC) is very useful in certain conditions of sea clutter. This control affects time sensitivity to provide contrast. It might roughly be compared to blinking the eyes in a blinding light so that close in objects can be seen more

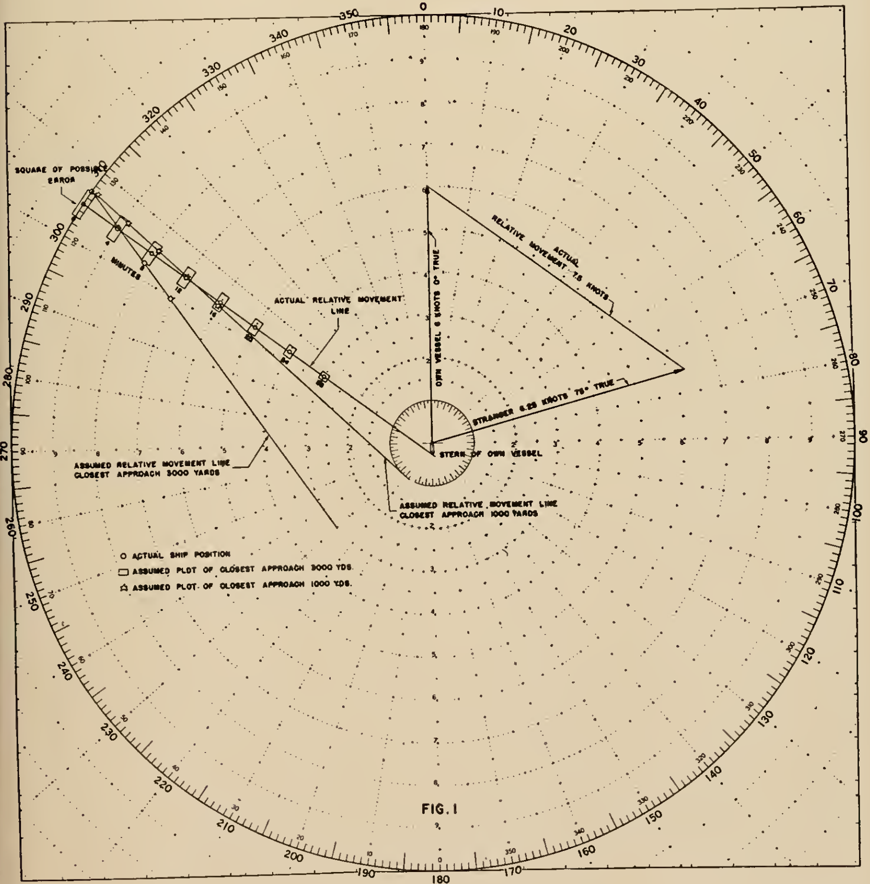

SQUARE OF POSSIBLE ERROR
MINUTES
ACTUAL RELATIVE MOVEMENT LINE
OWN VESSEL 6 KNOTS 0° TRUE
RELATIVE MOVEMENT ACTUAL 7.5 KNOTS
STRANGER 6.25 KNOTS 75° TRUE
STERN OF OWN VESSEL
ASSUMED RELATIVE MOVEMENT LINE CLOSEST APPROACH 3000 YARDS
ASSUMED RELATIVE MOVEMENT LINE CLOSEST APPROACH 1000 YARDS
○ ACTUAL SHIP POSITION
▭ ASSUMED PLOT OF CLOSEST APPROACH 3000 YDS.
☆ ASSUMED PLOT OF CLOSEST APPROACH 1000 YDS.
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FIG. 1

conspicuously—but at the same time the more distant targets will be somewhat obscured. Beware of fast-moving targets coming in from outside the reduced range of vision when using STC. Still another control called fast time constant (FTC) is useful in certain other sea return conditions by reducing the clouding or fogging of the scope and permitting better selection of targets from the sea clutter. This control is perhaps roughly analagous to using smoked glasses on the eyes to prevent glare blindness. Still another control is the range switch. By a flick of a switch the user can have a picture spread out with a maximum range of a mile or two or a display of perhaps 30 or 40 miles. It should be obvious, but apparently isn't, to the navigator that the range should normally be displayed with at least a full horizon distance when cruising so as to see hazards as soon as possible and to permit necessary maneuvers. If the user switches to a short range to get a good look at close-by targets and forgets to return to long range there is danger of breezing along under the impression that the road is clear — until some hazard suddenly appears at short range, too late for safety. All of these controls are very valuable to the user if he understands them and uses them as intended by the designing engineer. If not properly understood and used they may greatly reduce or nullify the value of the radar in detecting collision hazards.

(j) Last but not least is the old problem of "relative" versus "true bearing" on radar indicators. There is good reason to suspect that this has been a contributing cause of some collisions of radar equipped ships, either through mental error in mistaking the radar display or in failure of a relieving deck officer to ascertain which display was in use. Certainly for direct avoidance of collision a "relative" bearing display is simplest. However, when making a turn "relative" display moves rapidly and the scope blurs badly because of the inherent retentivity of the radar scope which is necessary to provide a continuous picture when scanning around the horizon with glimpses of about only 10 times a minute. Also for plotting it is often convenient to have true bearing on fixed objects. Therefore the radar is usually provided with both choices but the user must install in his mental equipment a big red sign saying clearly "this picture is in relative" or "this picture is in true" bearing before he reads anything else.

All of these technical aspects of a radar are very well known to engineers and technical radar men, but they apparently do not appear to be quite so obvious to the practical navigator. Not only should the navigator strive to equip himself with a clear mental picture of how this equipment operates but the designing engineer must continually keep in mind that the practical navigator is an extremely busy man at times when he needs the radar most and therefore he must have the help of the engineer in making the controls as simple as possible, self-restoring or automatically returning to the SAFE position and preferably with unmistakable symbols for each of the functional controls or indicators. The modern merchant marine radar is a masterpiece of electronic ingenuity and is usually a rugged and reliable piece of seagoing equipment but there is still room for much improvement in making it a handy and foolproof bridge officer's tool.

Now let us consider a problem regarding radar accuracy as an example to illustrate one way in which the use of radar can lead to a false sense of security. We can set up a simple problem and examine the results assuming that reasonable range and bearing errors are introduced. For simplicity we can assume our ship is on a course of 0° true at a speed of 6 knots during foul weather. Further, we assume that a stranger is picked up forward of the beam, actually bearing 305° true at a distance of 10,000 yards. If the stranger is on a course of 75° true at a speed of 6.25 knots, he will collide with our stern, assuming that our vessel is 750 feet long and that the radar is located on a mast 150 feet from the stern. As a matter of demonstration his relative movement line is shown on figure 1 with his relative position noted every 4 minutes.

It is estimated that the radar has a ± 2° bearing accuracy and a ± 100 yards range accuracy. There are those who will disagree with this accuracy, however, when we are dealing with the average radar with average attention to maintenance; and taking into account human errors, this figure is not overly pessimistic. The squares around each position indicate all possible areas where the radar might indicate that a target is located. As the situation develops we can assume that the combination of errors is such that our plotted relative movement line starts at the upper left-hand side of the zero square and ends at the lower right-hand side of the 8-minute square with all intermediate points falling within the square of errors at intermediate plots. The stranger would be computed to be on a course of 91.5° true at the speed of 4.4 knots which would indicate that his nearest point of approach will be 3,000 yards and that he will pass astern. Some deck officers might be satisfied with this, but they should continue to plot. Another 4 to 8 minutes' plotting would make the danger apparent.

Assuming that another deck officer is not too touchy about how close he passes other vessels and that he considers 1,000 yards sufficient, we will assume a long plot, starting at the upper right-hand corner of the zero square and running to the lower left-hand edge of the 12-minute square with all intermediate plots falling within the square of error at intermediate points. In this case the stranger will be computed to be on a course of 79° true at a speed of 5.5 knots with the closest point of approach 1,000 yards on the port quarter. Actually the vessel remains on a collision course and another 4-

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Two Thousand Ship Hours Saved By Long Beach Radar

AT the time Liverpool, England, port authorities were considering the establishment of shore-based radar as an aid to navigation, the feasibility of such a project was also called to the attention of the Board of Harbor Commissioners of the Port of Long Beach by the Sperry Gyroscope Company.

Specific tests were arranged for and conducted in New York and as a result of these tests and the visit to the Sperry plant, negotiations were completed upon the return of the Commission members to the West Coast, and Sperry radar was installed at the Pilot House in Long Beach, together with a suitable inter-communication system between the radar, pilot boat and pilots so that perfect coordination would be possible. Sanctioned by the Federal Communications Commission and U. S. Coast Guard as an advisory service, the equipment was finally put into use on March 18, 1949.

T. J. Thorley, Senior Harbor Engineer, at Port of Long Beach, operating radar-radio communications equipment aboard port pilot boat.

Thus, with the field in readiness, including all details (docks, buoys, breakwater entrances, and all vessels, small and large) accurately depicted as to range and bearing on the radar scope, it was only a question of teamwork in order to assure the proper application of the radar.

From this point on, Captain J. A. "Jake" Jacobsen, Chief Pilot, and his co-workers, including Pilots Halverson, Ougland, Aultman and Johnson have consistently cooperated in successfully pioneering the application of shore-based radar.

One of the first tests did a great deal to eliminate doubt as to the accuracy of the radar. The purpose of the test was to direct the pilot boat by means of radar and walkie-talkie from the Pilot House out through the East (Long Beach) entrance of the breakwater to the buoy south thereof.

It had been noted that the radar position of this buoy, 2.65 miles away, on the radar scope was approximately 400 yards east of that shown on the nautical chart in the Pilot House and it was suggested that the helmsman of the pilot boat be furnished bearings to the radar position rather than to the charted position.

This was done and, when the pilot boat arrived at a position in close proximity to the buoy in question, as indicated by radar, using walkie-talkie "Jake" inquired how close the pilot boat was to the buoy. To this the helmsman replied, "Twenty feet!" This was good navigation in anybody's language, according to "Jake," who notified the Coast Guard of the incorrect location of the buoy.

The Coast Guard, after checking same, reported back

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Port of Long Beach Radar and Pilot Station.

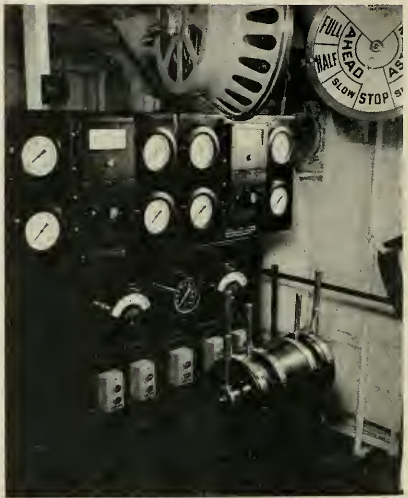
The Tug "Mahoe" Modernized

AFTER twenty-five years of continuous service, the *Mahoe* of the Young Brothers fleet, one-time queen of Pacific tugboats, has been rebuilt, repowered and thoroughly modernized. The new engine installation was completed on August 17, and the vessel made her trial run from Honolulu Harbor to Diamond Head and back on August 18.

Birthplace of the *Mahoe* was Seattle, where she was built in 1925 by the Ballard Marine Railway Company. L. H. Coolidge and John A. Young designed her for the special purpose of towing barges of pineapples from Molokai to Honolulu for canning. She was said to be the first twin screw tug in the Pacific and the largest diesel engine tug in the world. Mahoe is the Hawaiian name for twin.

The *Mahoe* is 120 ft. in length, has a 24.6′ beam, a displacement of 230 tons gross and a net of 62 tons. She was originally powered with two engines of 360 HP each, six cylinder 14″ x 17″, Model 35, two cycle, direct reversing. Today, after four months in drydock, repair and overhaul, she is driven by two Fairbanks-Morse Model 31 diesel engines of 440 HP each. They also are two cycle, and are positive scavenged, with full force feed lubrication, full oil cooled pistons and removable water jacketed cylinder liners. Propellers are Coolidge, Pacific type, 4 blade, 74″ diameter x 50½″ pitch. The main engines and Fairbanks Morse Model 36, 40 KW auxiliary are ABS approved and certified. The vessel is ABS classed.

The *Mahoe's* new silhouette is streamlined, with her stack smartly cut down. She has better accommodations for her crew of 15, and many other improvements on port and starboard, top and bottom sides. With a heavy



Top: View of control station located directly above the after end of the engine room. Shown are two FM gauge boards with Alnor Pyrometers and gauges for scavenging air pressure, lube oil pressure, fuel oil pressure and jacket water pressure. The lower panel contains the two Weston Electric Tachometers, an air pressure gauge and stop-start push button stations for control of auxiliary motor driven pumps and the air compressor. The speed and maneuvering control stand for both engines is pedestal mounted directly aft of the gauge board.

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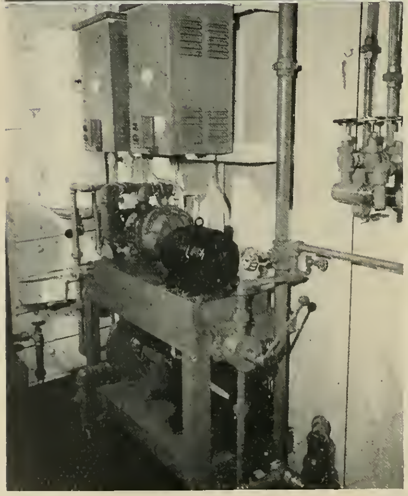
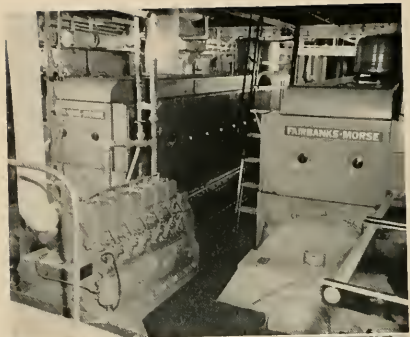
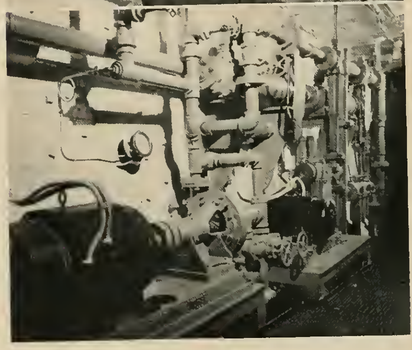


Bottom: View of forward engine room bulkhead, port corner, showing motor-driven before-and-after-service lubricating oil pump (Roper pump and FM motor) and the auxiliary jacket water circulating pump (auxiliary) which is a 1½″ FM pump and 3 HP FM motor. Similar equipment is also mounted in the starboard forward corner for service of the starboard engine.



Top: View of engine room looking forward, showing new main engines and new auxiliary generating set, which are: Two 8-cylinder, $8\frac{1}{2} \times 11\frac{1}{2}$, 440 HP, 525 RPM, Model 31A$8\frac{1}{2}$ Fairbanks, Morse & Co. direct reversing diesel engines each with F-M 2 to 1 reduction gear. Air inlet filter-silencers shown mounted at forward end of engines are Air-Maze No. 22 ms. Exhaust silencers are Maxim. Pyrometers are Alnor. One 6-cylinder, $4\frac{1}{4} \times 6$, 1200 RPM, Model 36A$4\frac{1}{4}$ FM engine direct connected to 40 KW, 125 volt DG-ZM Marine type direct current generator. (Not shown is a 2-cylinder Model 35A$4\frac{1}{4}$ engine direct connected to a 12 KW, 125 volt direct current generator). ▶



Bottom: View of starboard side of engine room, looking aft, showing: Motor driven general service pump; Quincy 17 cu. ft. two stage air compressor driven by a 5 HP FM motor; Cooling water heat exchanger, Ross; Lube-oil cooler, Ross; Lubricating oil strainers. The 12 KW generating set, oil cooler and heat exchanger, lube-oil strainers for the port engine are mounted on the port side of the engine room.

tow she is capable of a speed of eight knots and can go ten knots sailing light.

Master of the vessel is Ching Ho, a veteran of 20 years service with Young Brothers. Ralph King is Chief Engineer. As Capt. Ho was away at sea, the *Mahoe* was skippered on her test cruise by John A. Young, Jr., port captain of Young Brothers.

The Fairbanks Morse Diesel

The Model 31 (or 31A) Fairbanks Morse diesel engines have certain distinct advantages over previous types.

The cylinder liners are one-piece castings with an integrally cast water jacket. The liner is cast of a special close-grained iron of great tensile strength and is watertight. All liners are interchangeable.

The crankpin bearing shells are also interchangeable

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Broadside view of the tug "Mahoe" after completion of new engine installation.

New Features in Big Oil Barge

ANOTHER giant barge being built (and just launched) for Star & Crescent Boat Company of San Diego by the Pacific Coast Engineering Company, Alameda, will be the first barge built with their new rake form bow and stern. The dimensions of this barge are 235 ft. x 45 ft. x 16 ft., with a capacity of approximately 26,000 bbls. of gasoline. Another vessel of the same type was laid down immediately after the launching.

In the construction, the customary procedure was followed which has been developed over the years for low-cost fabrication of gasoline barges in that the two rake ends were built upside down off the shipways. Building the rakes upside down has particular advantage for barges with the new rake form because it facilitates the fitting, assembly and welding of the rake stiffeners and rake shell plating. The new rakes have no flat surfaces on the shell and building them right side up would be a costly operation.

In the past the builders have always built each rake in two or three sections, each weighing 20 to 30 tons. The sectionalized rake sections have then been assembled to the mid-body on the ways.

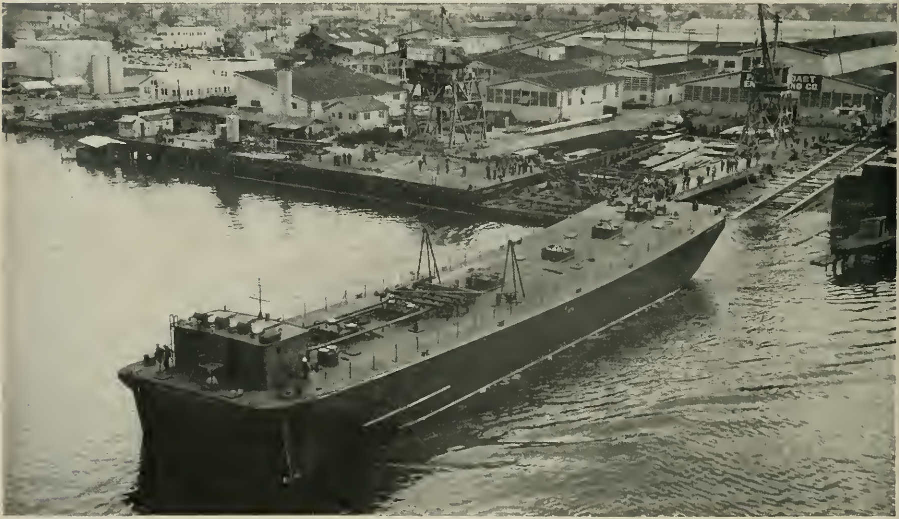
On this job, partly because of its great size, and the complicated internal construction, the after-rake was best built from a cost standpoint in one single piece. This single piece weighed approximately 78 tons and was handled by two of Smith-Rice Company's derrick barges. Either barge was capable of handling the section. However, in the lifting and turning operation, Smith-Rice felt it advisable to use two derrick barges rather than one.

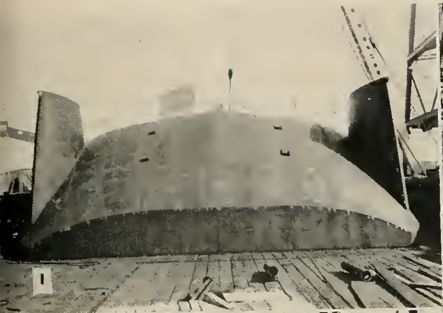
The operation consisted of lifting the after rake into the water, turning it right side up in the water, then lifting and placing the rake section against the mid-body section on the ways. The pictures illustrate the various steps involved.

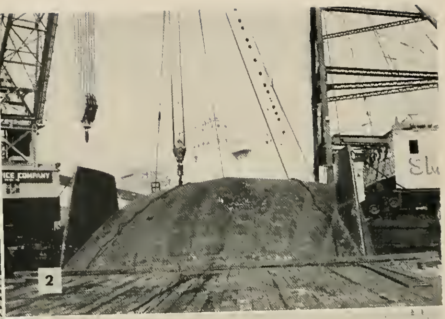
In addition to the savings obtained by assembling the unit in the upside down position, there is also additional saving in that most of the welding can be done positioned down-hand. Also eliminated by building the rake in one piece, was the necessity of handling two or three pieces from the erection side to the ways. Double fit up was thus avoided.

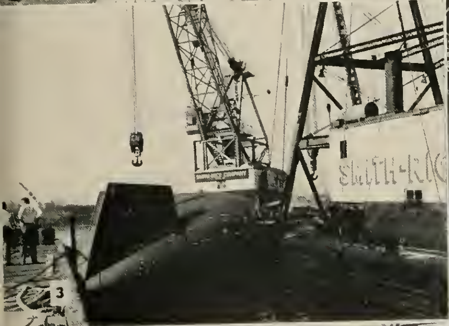
This barge incorporates an entirely new design which

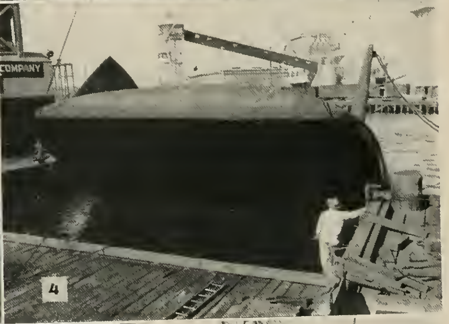
Barge No. 24 for the Star & Crescent Boat Company being launched from Pacific Coast Engineering Company ways.

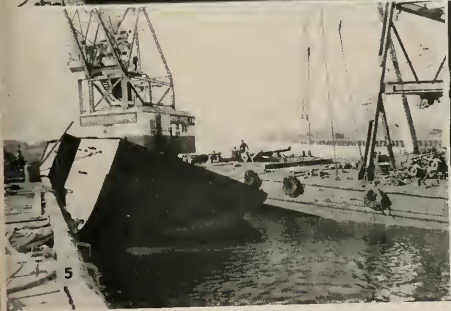


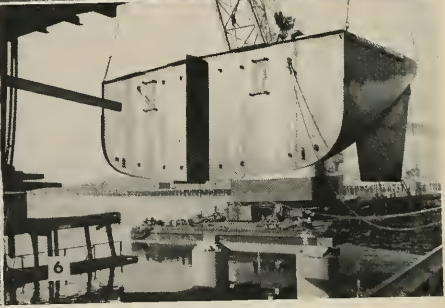












1. The upside down rake section of the bow about to be lowered into the water.

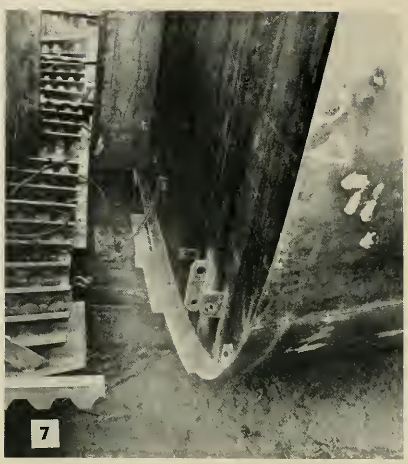
2. Same as No. 1 but in the water.

3. Same as No. 2 but a side view.

4. On the way to tipping it over.

5. After being tipped over—side view.

6. Being swung into place and ready to lower.



7. Ready to bump after being lowered onto the skids and pulled up into position opposite the body of the barge which is shown at the left.

shall be the forerunner of subsequent vessels of this type to be designed and built for the coastwise trade. The unique design of this barge was first tested by the use of models at the towing tank of the University of California at Berkeley. From the numerous designs tested, the company ultimately chose a barge which has both a molded bow and stern and shows a decrease in towing resistance of 35 per cent below previous barges intended for this service.

The Star & Crescent No. 24 is an unmanned barge intended for coastwise service between San Pedro and San Diego and is built to the highest classification of the American Bureau of Shipping.

The barge is divided into 16 cargo compartments which are serviced by three Byron Jackson cargo stripping pumps driven by General Motors Model 6-71 Diesel engines. This arrangement allows a full cargo to be discharged in a period of four hours. An independent stripping system is also incorporated in the vessel. This consists of two Worthington stripping pumps driven by Adel hydraulic motors. The entire electrical system for the barge was provided and in-

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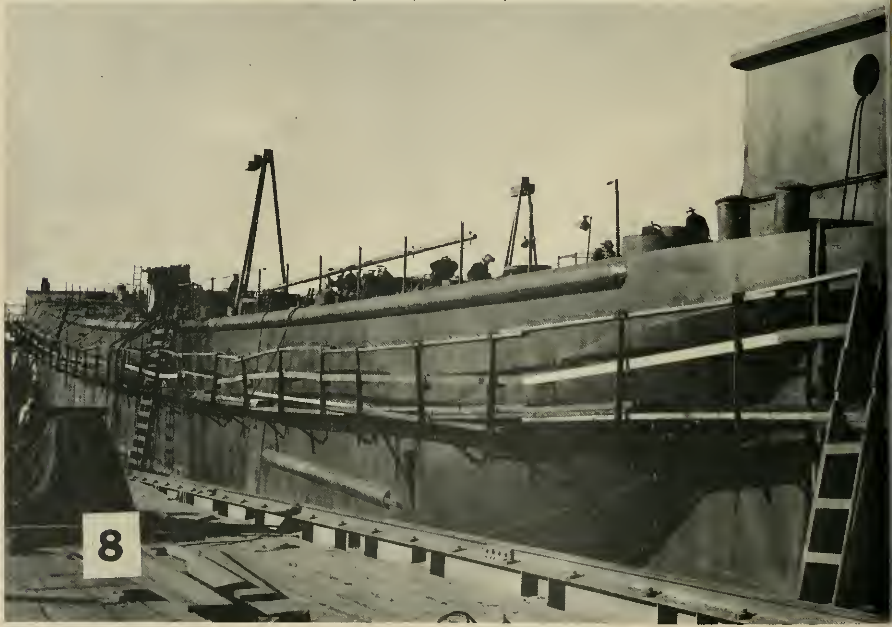
8. The barge at the pier with ends joined to the hull.



New Grace Line Pier at New York

THE first phase of the construction of a new Pier 57 North (Hudson) River, to be leased to Grace Line, has begun. The proposed new pier, novel in design, and estimated to cost $7,000,000, is based on unusual construction techniques never before applied to pier construction in New York Harbor. Fundamentally, the pier will be a completely fireproof, concrete, box-type substructure with a modern steel and concrete two-story pier shed superimposed. It will be about 725 feet long and 150 feet wide with two slips 236 feet wide for joint use with piers to the north and south. The dredged depth adjacent to it will be approximately 35 feet.

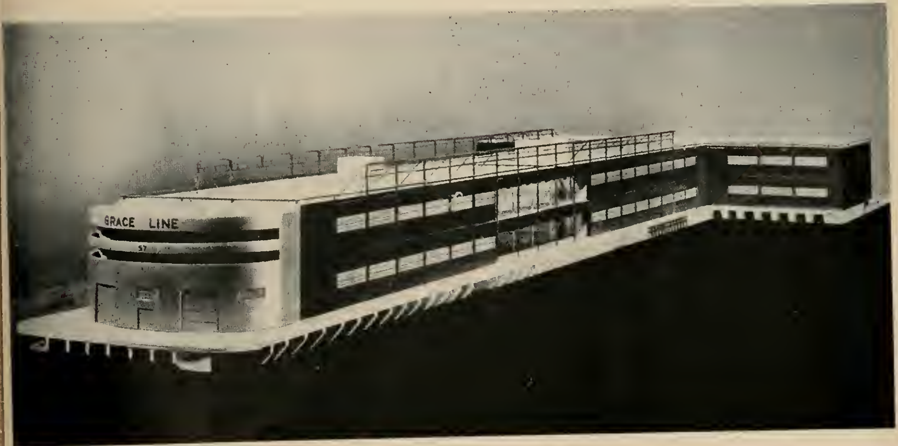
The unusual design of the pier shed has eliminated 75 per cent of the supporting columns and will permit the utilization of the area beneath the main deck for cargo handling and the in transit storage of fresh fruits and vegetables requiring heat control and air conditioning. The sub-structure of the bulkhead shed will be fitted out similarly to a standard commercial building with all utilities, heating system, and garage for pier mobile equipment, thus freeing 90 per cent of the main deck area for off-street truck loading and unloading under cover, and directly to and from the pier. Ramps are located within the pier to provide access to upper decks by trucks, and in the bulkhead shed to permit passenger cars, taxis, and baggage delivery to reach the basement and elevators without interfering with cargo handling operations. The bulkhead shed structure is similar to the pier shed except that it is 135 feet wide and has a masonry facade at the street front.

The first phase of construction calls for utilizing dredges and scows to remove the silt from the river bottom immediately around the old pier to a depth of 36½ feet below mean low tide. Following this operation a barge equipped with an underwater saw will cut off the approximately 2300 old piles to a depth of 34½ feet below mean low tide. The site then will be leveled carefully by dragging, and a two-foot level of sand deposited over the bottom to form a level sub-base for the pier structure. To consolidate the river bottom, large pipes will be driven open-ended into the sand and silt river bottom to a depth of about 50 feet. The silt will be removed through the pipes by jets of water, and then, after the pipes have been filled with sand, the steel casing will be removed. These vertical sand drains will be placed approximately 20 feet apart throughout the foundation of the pier site. After this operation, a two-foot layer of gravel will be placed on top of the sand base and the river foundation will be ready to receive the large reinforced concrete boxes which are to form the support for the pier proper.

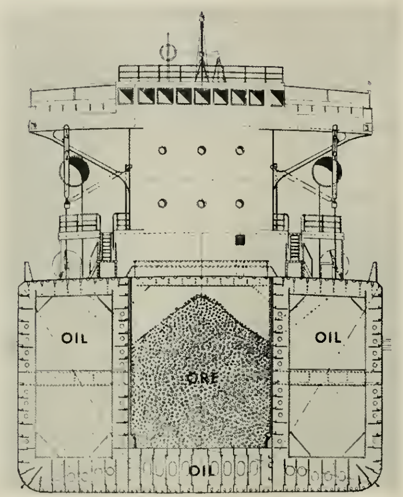
The two concrete boxes, which will be floated to the

(Continued on page 82)

Artist's drawing of new Grace Line Pier at New York.



Combined Ore Carrier and Tank Motorship In Sweden



Above: Diagram showing how coal or ore is loaded in the center well of the "Porjus" while oil tanks appear below and at the sides.

Below: The fully loaded "Porjus" at sea.

THE motorship *Porjus* of 15,600 tons d.w. was delivered by Gotaverken to Trafikaktiebolaget Grangesberg-Oxelosund, Stockholm, Sweden, on November 7, the fifth and largest ship of this type to be incorporated with the Swedish Merchant Fleet.

This type of ship, of which up to now there has been no exact prototype except in Sweden, has been designed with cargo holds for iron ore at the center line while oil tanks have been placed below and at the sides of these holds. A ship of this kind carries ore when outward bound and returns with a load of oil, thus avoiding journeys in ballast condition, as is generally the case with ships specially built for the ore trade.

Gotaverken built two other ships of this type for the Grangesberg Company, the sisterships M. S. *Rautas,* delivered in 1944, and M. S. *Raunala,* delivered in 1946, each of a capacity of 12,000 tons d.w.

The new ship, built to the highest requirements of Lloyd's Register, has the following principal dimensions:

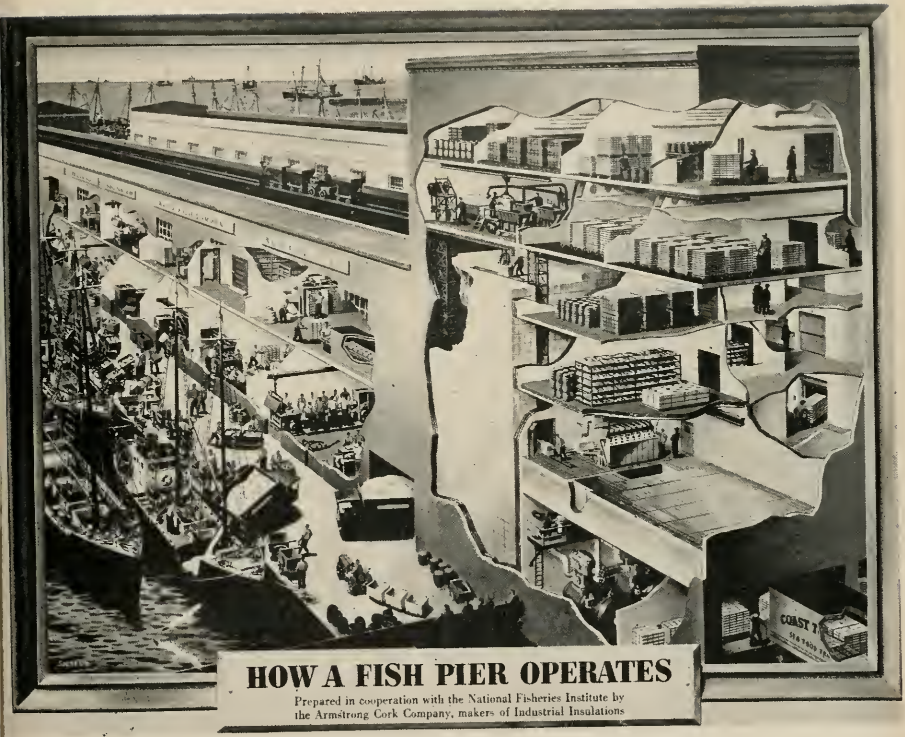
Length overall	532′ 6″
Breadth moulded	68′ 0″
Depth moulded	38′ 6″
Draught on summer freeboard	28′ 5″

The ship is all welded, has been constructed with longitudinal frames and has a streamlined deckhouse. The poop deck has been extended forward and cargo tanks stretch as high up as to the extended part of this deck.

From the bridge house amidships it is possible to

(Continued on page 79)

Insulated Piers


HOW A FISH PIER OPERATES
Prepared in cooperation with the National Fisheries Institute by the Armstrong Cork Company, makers of Industrial Insulations
COAST

This view of a typical fish pier appeared in a full-color page advertisement in the November 18 issue of The Saturday Evening Post, and was presented by the Armstrong Cork Company in cooperation with the National Fisheries Institute.

A modern fish pier is an exciting place. Here you see the ancient fishing industry brought up to date. All activity is geared to one purpose—bringing fish to your table as fresh as the day they were caught. This calls for very low tempertaures for quick-freezing and for making mountains of ice. To keep down refrigeration costs, a modern fish pier uses lots of insulating materials.

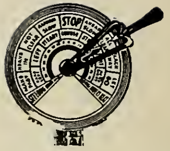
Before the fishing boats put to sea, tons of ice are dumped into their holds to preserve the catch on the trip home. Corkboard lines these vessels to keep the ice frozen and the fish fresh. Fishermen buy ice from the company that makes it, stores it, and crushes it in a plant right on the pier. Corkboard insulation on the floors, walls, and ceilings helps to keep the ice from melting.

When the fishing boats return, wholesalers bid for the catch in the auction room. Then they fillet the fish and pack some in ice for local delivery. Fish that can't be handled in one day are held overnight in cork-lined cold rooms. Fish for freezing are packaged and sent to 40° below zero blast freezers. Then the frozen packages are stored at about zero until they're shipped. Like the ice storage, these rooms and the blast freezers are built with Corkboard to hold the low temperatures. Refrigeration for these low temperatures travels from the compressors throughout the building in pipes insulated with Cork Covering.

Trucks lined with Corkboard or Fiberglas keep the fish frozen while being shipped all over the country.

Steady as you go!

KNOWLEDGE IS THE STRAIGHT
COURSE TO ADVANCEMENT



A Department for Deck Officers

by "The Skipper"

**Questions Welcomed. Just Address "The Skipper," Pacific
Marine Review, 580 Market St., San Francisco, California**

The Trend of the Times

IN a recent conversation with Captain M. E. Crossman, Superintendent of the U. S. Maritime Service Training Station at Alameda, I was interested to learn of the trend of the seaman in turning toward learning. This trend brought forth the thought that, much as some of us who are older dislike to admit it, brain is triumphing over brawn. Gone are the days of the bully mate. Today's efficiency depends upon knowledge and its application. The efficient mate of today would better be a psychologist than a pugilist, a college professor rather than a jolly wrestler, a statistician as well as an electronics technician.

Many seamen of today go to college and then to sea instead of as old starting to sea at twelve or thirteen or fourteen and graduating from the school of hard knocks.

I'm sure many of us have observed that there are many old timers on the beach while younger men are filling their places on the ships, and quite ably too. Why? Could it be because the younger men have a better basic education and are not so averse to learning as some of us who came up the hard way? Could it be that because of the trend of the times these younger men see the advisability of keeping up with the times, of keeping abreast with the modern methods? Could it be that these younger men see that their value to the company is dependent upon their ability to efficiently do the job for which they are being paid? Could it be that they realize that the ability of the company to pay good wages is dependent on their "know how" and its application, in increasing the revenue and earning ability and decreasing the cost of maintenance and upkeep of the vessel on which they sail?

This trend of the seaman toward learning is certainly praiseworthy and gives "The Skipper" the incentive for continuing in his column the publishing of material which he hopes will be of practical value to other seamen.

In view of the foregoing and knowing many ship's officers who have never used an Interval method to determine the ship's time of Local Apparent Noon, it seems worthwhile to explain and give an example of the use of this method.

In accordance with tradition and the practice of good navigation, all navigators get a morning sun line and a noon latitude sight whenever possible. It is common practice also to precompute the ship's time of Local Apparent Noon. This can quite easily be computed by converting the *exact* meridian angle (or Local Hour Angle East) which existed at the instant of the observation to minutes of arc and dividing this sum by the rate of gain (or approach) of the sun on the ship.

For clarification perhaps I should explain what is meant by rate of gain (or approach). We all know that the sun apparently travels westward at a rate of fifteen degrees of arc per hour. Multiplying this 15° by 60′, we have 900′ of arc per hour as the speed of the sun. If we were standing still the sun would approach our meridian at a rate of 900′ per hour. Unfortunately, a ship earns no money, nor gets its cargo from one place to the other while standing still and so must be on the move. While moving, it is usually making good some difference of longitude, either east or west, dependent on its course. This hourly difference of longitude can easily be determined from our plotting sheet by stepping off along our course line a distance equal to an hour's run and then measuring the difference of longitude made good in one hour. If the vessel is on a westerly course, this hourly difference of longitude is subtracted from 900′ to determine the *rate of gain* of the sun on the ship. If the vessel is on an easterly course the difference of longitude is added to the 900′ to determine the *rate of approach* of the sun and the ship.

Remember if the ship is making good easterly difference of longitude the ship is going toward the sun and the *rate of approach* is greater than 900′. If the vessel is making good westerly difference of longitude the *rate of gain* of the sun on the ship is less than 900′.

Now let us take an example and work it out. Let us assume that an observer on a vessel in D.R. Lat. 35° 07′ N., Long. 134° 45′ W., on course 215° true at a speed of 16K observed the sun's lower limb to subtend an altitude of 38° 31′ .1 at 17^h—47^m—12^s G.C.T. (08—47—12 ship's zone time) on September 1, 1950 from a 37 foot height of eye. First he solves for a line of position as is shown below.

G.H.A. of Sun at 17^h G.C.T. = 74° 59′ .6
Corr'n to G.H.A. for 47^m 12^s = 11° 48′ .0
G.H.A. of Sun at observation = 86° 47′ .6
Assumed longitude = 134° 47′ .6
Meridian Angle East = 48°
Sun's Declination = 8° 18′ .5 N
Sextant Altitude of sun's lower limb = 38° 31′ .1
Correction for H.E., S.D. Ref. & Parallax = 9′ .0
True altitude = 38° 40′ .1
From H.O. 214 Tabulated altitude = 38° 49′ .2
Correction for difference between true and tabulated declination = 7′ .1
Computed altitude = 38° 42′ .1
True altitude = 38° 40′ .1
Intercept is away 2.0 mi.
From H.O. 214, True bearing is 109 .°4.

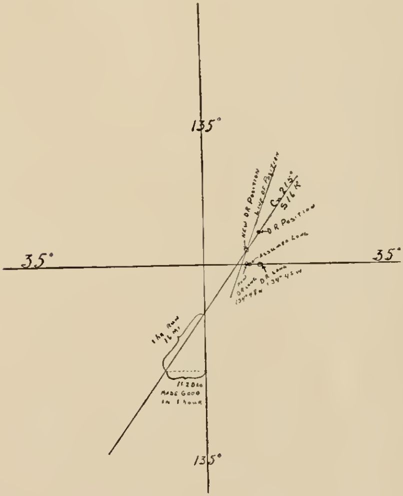
The observer now plots his line of position as shown in sketch.

As can be seen from the sketch the observer now chooses a new D.R. position and a new D.R. longitude which he feels sure will be more nearly his true longitude. He now applies this new D.R. Longitude to the G.H.A. of the sun at the time of observation to get the exact meridian angle which existed at that instant.

G.H.A. of sun at observation	86° 47′ .6
New D.R. longitude	134° 48′ .0
Exact meridian angle East	48° 00′ .4

He now multiplies the degrees of this exact meridian angle by 60 and adds the minutes and tenths of minutes. 48° times 60′=2880′ plus 0′ .4 equals 2880′ .4. This is the number of minutes of arc between the hour circle of the sun and the observer's meridian at the instant of the observation or this is the distance in arc that the sun had to travel to arrive at the meridian of the observer at the time of the observation.

Again referring to the sketch we see that for every hour's run of 16 miles the vessel is making good 11′.2 D. Lo. to the westward. So for every 900′ of arc that the sun apparently moves westward the ship is moving 11′.2 of arc to the westward. Subtracting 11′.2 from 900′ we see that the *rate of gain* of the sun on the ship is 888′.8. Now if the sun were 2880′.4 behind the shp at 08—47—12 ship's time and gaining at the rate of 888′.8 per hour, by dividing 2880′.4 by 888′.8 we find that 3.2408 hours or 3 hours 14 minutes and 27 seconds would be required for the sun to overtake the ship. This is called the *Interval to Local Apparent Noon*. Adding this interval to the time of the morning observation (8^h 47^m 12^s plus 3^h 14^m 27^s) we get 12^h 01^m 39^s as the ship's time of Local Apparent Noon.



Now let us assume for a moment that the vessel had been on a course of 145° True instead of 215° True. At the same speed and in the same latitude, she would have been making good 11′.2 D. Lo. to the Eastward instead of to the Westward and this 11′.2 D. Lo. would have been added to the 900′ speed of the sun, thus giving us a *rate of approach* of 911′.2. The 2880′.4 would have then been divided by the 911′.2 rate of approach giving us 3.1611 hrs. or 3^h 09^m 40^s as the interval. Adding this to the ship's time of the observation 08^h 47^m 12^s, we find that the ship's time of Local Apparent Noon would be 11^h

(Continued on page 79)

Pacific WORLD TRADE

Reg. U. S. Pat. Off.

Fire Problems Aboard American Vessels

(Concluded)

By CAPTAIN EDWARD C. HOLDEN, Jr., U. S. N. R.
Master Mariner

Manager, Marine Safety Department,
United States P & I Agency
and Past General Chairman,
Marine Section, National Safety Council

The first half of this article appeared in the November issue.

Lessons to be Learned from Marine Fire Casualties

A study of marine fire casualties shows that they are often due to failure to take elementary precautions which is the cause of loss of life and property at sea. If all masters and officers, instead of merely the majority, complied with regulations and took ordinary common-sense precautions, there would be fewer marine casualties. The problem would seem to be psychological. A complex, "it can't happen to me," seems to prevail in too many instances.

That, indeed, would appear to be the only feasible explanation of the neglect to provide and maintain safety appliances aboard vessels, both in port and at sea.

The obvious precautions for a master to take are in respect to maintaining safety equipment and appliances in good order, and ensuring that all members of the crew are familiar with their proper use by frequent exercises and instruction. That these precautions are neglected is only too true.

The inexplicable attitude of some seamen toward the provision and maintenance of appliances designed for the safety of life at sea has as a counterpart that connected with the safe navigation of ships. Can anyone explain why it is that due regard is not always paid to the four "L's" of safe navigation—log, lead, latitude and lookout? Why, in a vessel fitted with radar, should there be a reluctance to use it to fix a ship's position when, in the proximity of navigational hazards, the position cannot be accurately fixed by other means. Why do ship collisions continue to occur with increased frequency when one or both of the vessels involved are equipped with radar? Why is the fathometer not used at all times when a sounding could be of assistance in fixing a ship's position or at least providing a warning of shoaling waters? Or if the ship is not fitted with a fathometer, why the lead is not used? Why is a lookout not posted when visibility is reduced or as soon as evening twilight begins to fade?

It certainly is not ignorance of the necessity for such precautions to be taken. It may be laziness, over-confidence, or the "it can't happen to me" complex referred to. Still the fact remains that many marine casualties which have occurred would not have happened if common-sense precautions had been taken. Why is it that many officers do not know the location of valves to the sprinkler and/ot CO_2 systems aboard ship? Why is it that some officers and crew members will venture into a gassy compartment or tank without a proper test being made? Or into a tank which is lacking in oxygen? Why will officers and men be careless about smoking thereby causing fires? Why will longshoremen smoke in cargo holds? Why is it that fire screen doors and their controls are not frequently checked and kept in good condition? Why is it that automatic fire doors are often found to be wedged or fastened open by any means other than the magnetic holdbacks provided? Why is it that crew members do not immediately report any sign of fire and know how to sound an alarm in the quickest possible way from any part of the ship? Why is it that all hands often do not know the location of fire fighting appliances and how to use them effectively against a fire. Why is it that engineers often do not know the location of the emergency control for the fuel oil shut-off valve located outside the machinery space in case of a fire in such space? Why is it that crew members do not have definite fire fighting duties assigned to them? Why is it that officers and men do not receive routine instructions and practice in the use of fog-spray nozzles, operation of CO_2 systems, types and use of portable extinguishers, use of gas masks, breathing apparatus, safety lines, etc.? Why is it that officers often do not know how to fight certain types of fires based on practical experiments and recommendations by the United States Coast Guard. Somewhere, somehow it would appear that "the message does not get through to Garcia." The accident record showing "Human Failure" on the part of masters and officers aboard vessels is astonishing.

Use of Water-Fog Nozzles, Steam, Carbon Dioxide

The advantages and disadvantages associated with water in fire fighting should be known. Tests have shown the disadvantages of using a solid stream of water in certain cases. Tests have shown the effectiveness of a finely diffused spray or fog, especially in fighting tanker fires in conjunction with the use of foam. Tests have shown the success of high capacity water fog nozzles in absorbing heat so rapidly, that a footing could be secured on deck in a short time and foam pumped below. Tests have shown methods for dealing with cotton fires. Experiments on a Liberty ship in 1946 by the U. S. Coast Guard showed that many fires in bales of cotton could be extinguished by reducing the oxygen content of the atmosphere to a fairly low level over a reasonable time. This fact has been verified when the same method was used in fighting cotton fires aboard ships at sea by a trained crew. Tests have shown that in some cases the use of steam was not very successful in reducing the percentage of oxygen around a fire in certain types of cargo; also as soon as the steam was shut off a vacuum was created drawing fresh air into the space in considerable quantity, thus re-kindling any fire which has not been properly extinguished. Tests show carbon dioxide to be useful for many types of ship fires, as it does not damage cargo and may be stored for an indefinite period without deterioration. It has been found that fires in machinery space bilges, which have obtained a firm hold, can be extinguished without cutting off ventilation by the use of this gas. It is also extremely useful for protective purposes, being discharged until the oxygen content of the atmosphere is dissipated to such an extent that it cannot support fire.

Shipmaster and officers should know the functions and uses of all types of modern fire fighting equipment and appliances. Many vessels have been abandoned due to fire when expert knowledge would have saved the vessels, lives and property.

Causes of Fire Aboard Vessels Undergoing Repairs

A study of causes of fire aboard vessels while in shipyards or undergoing repairs or alterations elsewhere indicates that most of the fires are attributable to careless practices such as the use of burning and welding apparatus (which statistics show to be the greatest single cause of fires) without heed to what may be on the opposite side of the plating, or to faulty temporary electric equipment, such as faulty or improperly fused circuits. Other examples of careless practice are the indiscriminate throwing away of lighted cigarette ends, and the failure of watchmen to carry out a proper patrol.

The major causes of fires in ships in port during the last four years were:

1. Burning and welding apparatus (From flying sparks.)
2. Smoking materials and matches. (Violation of NO SMOKING regulations.)
3. Electric wire and cable, etc. (Worn insulation).
4. Galley stoves. (Sooting-up and overheating of the flues and funnels.)
5. Hot rivets.

It should be stressed that close liaison should exist at all times between the shipowners and ship repairers to prevent fires.

The most important time for an efficient watchman patrol to be made is that which follows the general "cease work" or "between shifts". It should take place as soon as possible after all workmen have gone ashore. Particular regard should be paid during this patrol to those

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MARINE MANAGERS

Clayton E. Roberts — Alberto Martinez, Jr.

parts of the ship where work has been going on during the day and to parts to which the workmen normally have access.

We find that the Shipbuilders' Council of America and its membership is representative of the highest degree of "safety-mindedness" in fire prevention in shipyards and aboard vessels under repair or construction.

However, it is strongly recommended that in relation to a ship undergoing major repair there should be a clear and preferably written agreement between the owners and repairers concerned setting out in precise terms where the responsibility for fire protection lies. The terms of the agreement should be made known to all concerned, and should include a clause stating which party accepts responsibility for recommending a cessation of pumping water into a ship on fire on the ground that further water would imperil the ship's stability.

Materials in Which Fires Commonly Originate

Experience shows that the following materials have been the source of origin of many ship fires:

1. Cotton waste, often in conjunction with oil and rags.
2. Open paint or oil containers.
3. Dunnage, rope and rubbish.
4. Granulated and slab cork in vessels having insulated holds and refrigerators.
5. Bedding and furnishings in cabins.
6. Certain types of cargo such as cotton, esparto grass, etc.
7. Explosions due to accumulation of propane, oxyacetylene and other gases.
8. Spontaneous combustion in lockers, storerooms, etc.
9. Improper storage and securing of hazardous cargo.

Preventing Accidents is Money in the Pocket for Industry

Until top management of any enterprise understands insurance for what it really is, not a bulwark against casualties and legal liability payments but a means of releasing working capital, you will not have an enlightened policy in accident prevention.

We hear much about keeping "costs down" but at the same time some executives leave the bottom of their money bag wide open through penalties incurred as the result of accidents.

Through the prevention of accidents, through the abatement of hazards, through the medium of employee safety education, through the medium of effective safety organizations (in fact, not in name) through the development of a spirit of cooperation and teamwork all along the line, afloat and ashore, a better understanding of the problems may be evolved for "KEEPING COSTS DOWN." American insurance companies are unquestionably the leaders in focusing the light of human understanding of these great problems into the minds of men.

The first essential to be recognized by management is that there are three basic loss sources:

1. The loss, damage or destruction of property.
2. The loss, damage or destruction of cargo.
3. Personal injuries and loss of life.

NOTE: These three basic loss sources added up means that no company can long continue on a sound financial basis and continue earnings on a proper level without the protection afforded by insurance.

When insurance companies help industry to keep expenses down they are helping industry to earn increased profits.

Many steamship companies know that very substantial economies can be effected through sound accident prevention practices. The prevention of loss, damage or destruction to property, cargo, and the avoidance of personal injuries or loss of life prevents loss of time in ship operations and all expenses incidental thereto. It is also recognized that the so-called "incidental" costs of accidents are placed at four times as much as compensation and medical payments. Yet even this fact does not tell the whole story. It has been found that cost problems resulting from potential hazards and delays in operations are considerably greater in effect than even this ratio would indicate in everyday steamship operations. Every life saved, every property damage, etc. avoided means money in the pocket for all concerned. The increased efficiency, increased morale, and attitude improvement toward the company all add up to a point where it is impossible to figure the good results to a company in dollars and cents alone. It promotes good personnel and public relations as is proven by the results attained in our major industrial and steamship companies today where effective accident prevention organizations function.

It should, therefore, be evident to all that sound safety engineering practices are growing more important every day.

How to Solve Marine Safety Problems

The KEY to the safety problem in the marine industry, and with particular reference to the fire problem, is to be found in the adherence to certain fundamental safety principles and effective methods of applying them.

These fundamental safety principles and methods of application are well established throughout all shore-side industrial companies of repute today. There are not "top secrets" in connection with safety programs. They merely require "top management" direction. In fact, competent direction is the KEYSTONE of effective accident prevention work.

The Elements of an Effective Safety Program

An accident prevention program should include the fundamental elements of management, human and mechanical engineering.

The *Technique* of marine safety involves the ability to combine these fundamental elements with those of seamanship and marine engineering.

For all practical purposes safety engineering is synonymous with efficiency engineering. The *Safe Way* is the *Right Way*, the *Efficient Way*.

Top management's interest in a safety program is threefold:

(a) A low accident experience for the hazards involved demonstrates that ship operations are under proper safety control.
(b) Since accidents can be controlled, it is evident that a good accident record will raise over-all operating efficiency.
(c) A safety program is a fruitful, inexpensive approach to harmonious employee relations.

The master, heads of departments, and officers aboard ship are KEY MEN in the safety program. Their *Leadership* will determine the success or failure of any safety program. They must set the example for safety and efficiency in operations. Any lack of interest or sincerity will soon stand out in the minds of men like a sore thumb.

Each company should establish *A Plan for Safety Action.* It should contemplate a workable officer safety organization aboard each ship of the company's fleet together with a standardized procedure.

Experience proves that best safety results are obtained by the establishment of officer safety committees. Discussions by the "conference method" invariably bring good results.

The minimum work of each officer safety committee should be:

(a) Periodic inspection of each department aboard ship.
(b) Observation of *Unsafe Work Habits, Unsafe Work Practices.* or *Conditions* which may cause accidents, *Fire* or explosion.
(c) Consider and decide upon safety recommendations. (Be practical.)
NOTE: "Half-Baked Ideas" will serve to discredit the committee.
(d) To keep a written record of action taken in regard to safety recommendations by means of safety minutes.
(e) See that new men are properly instructed in the *Safe Way* of performing their work.

The United States P. & I. Agency is generally recognized as the pioneer and leader for safety in the marine industries.

In Conclusion

American naval architects and American ship owners of today unite their forces in the planning, designing and construction of what they believe to be *Safe Ships.* The American marine industry can well be proud of the American leadership for *Safety*; it can also be proud of the faithful support which has been accorded through many years for its benefit by American fire and *Marine* insurance companies which have always exerted a profound leadership and influence for *Safety—Fire Prevention*—and *Fire Protection.*

We thereby have achieved *Unification* of effort in carrying on this great work.

Our great problem today is in relation to the human element, masters, officers and crew—for safety in operations. Then too, aboard passenger vessels, the problem is complicated by careless acts on the part of passengers such as cigarette smokers who thoughtlessly toss cigarette butts around.

While it is most gratifying to see very favorable results from our safety work in the marine industry during the past year, nevertheless we must not rest on any laurels or fleeting thoughts of success, but each year rededicate ourselves anew in safety work and endeavors.

We do know that *American Ships* are now the *Safest Ships* in the world; nevertheless, we must work harder than ever to keep them so. A single failure in the chain of command—from management right down the line through the ranks of the crew—may cause a major disaster and catastrophe.

The world situation today calls for increased safety awareness on our part.

Our own economy calls for increased safety participation.

Eternal Vigilence is the Price of Safety.

Financing World Trade

By A. M. STRONG*

Vice-President, American National Bank
and Trust Company of Chicago

I AM GLAD to see the interest displayed by foreign traders in your conference. Such conferences serve a double purpose. They acquaint the public with the latest developments in international commerce and clarify public opinion on government policies affecting foreign trade.

Foreign trade is a necessity to all the countries of the world because each country has different characteristics and climatic conditions, different resources. Minerals, agricultural products and animals abundant in one place are scarce in another. Without foreign trade the quantity and variety of goods available for consumption would be drastically reduced.

The importance of our export trade to our national economy and well-being is well known. Many of our in-

A. M. Strong

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*Presented before the World Trade Conference, Norfolk, Virginia, November 16, 1950.

dustries employing and supporting several million people depend to a great extent upon sales to foreigners. In 1949 our industrial and agricultural enterprises sold a substantial share of their products in foreign countries. Wheat exports were 39% of the entire production; raw cotton —32.6%; machine tools—32.2%; paraffin wax—30.8%; leaf tobacco—25.6%; lubricating oil—25%; turpentine —24.7%; lard—23.7%; copper—17.8%; soybean oil—17.2%; tinplate—15.1%; petroleum coke—14.4%; condensed and dried milk—12.7%; structural shapes—12.4%; printcloth—11.9%; wrought iron and steel products—11.8%; anthracite coal—11.6%; rails—10.9%; soybeans—10.3%; cotton cloth—10%.

The United States with its enormous resources and great capacity for production, must import a great variety of raw materials. There are many finished products which we can obtain economically from other countries. Many primary goods found only abroad are indispensable to our economy. To meet our requirements of industrial raw materials and foodstuffs, we must import sugar, coffee, cocoa, tea, drugs, spices, manganese, nickel, bauxite, tin, copper, rubber, furs, wool, silk, hides and skins, burlap, bristles, shellac, essential oils, jute, chicle, cork and many other products. Imports constitute the largest source of dollar exchange for foreign countries. Consequently, our ability to sell depends mainly upon the volume of goods we purchase.

With few exceptions the countries of the world maintain controls over their moneys and controls over their international trade. Most foreign moneys are no longer freely convertible into American dollars. In all countries including the United States no enterprise is hampered as much by red tape, regulations and prohibitions as is foreign trade. The foreign trader is subject to constantly changing governmental regulations. He must obtain licenses, adhere to quotas, file declarations and is placed under strict supervision as though he were engaged in some undesirable business. The American exporter is subject to foreign government regulations. He must be certain that an import license and permit to transfer the money was granted to the purchaser in the foreign country. Before making a shipment, he must comply with consular requirements that differ for each country.

There is no justification for this restraint upon a business that provides a livelihood to approximately six million people in our country and to a great many millions all over the world—a business which is absolutely essential to every country's welfare. This infringement by government upon private enterprise retards the normal flow of goods between countries. Every effort should be made to free foreign trade from government interference.

In the early period of international trade, goods were bartered. Enterprising merchants loaded their rafts or boats with goods produced in their country for exchange for the products of other countries that could be profitably sold at home. Today's foreign trade is conducted on an entirely different basis and each deal involves a monetary transaction. The buyer must pay for his goods and the seller must receive payment through the medium of a bank.

While the banker played an important role in international commerce throughout the ages, extensive bank financing of foreign trade began only in the 19th century in England and in the 20th Century in the United States. The Bill of Exchange Act became a law in England in 1882. The United States Banks were granted acceptance privileges with the adoption of the Federal Reserve Act in 1913.

Banks were reluctant at the outset to engage in this new business which was little known to them, and this reluctance is still displayed today by many banks throughout the country. Out of a total of 14,650 banks, approximately 150 or about 1% engage in foreign commercial business. The financing of shipments under the Economic Cooperation Administration has so far been allocated to only 60 banks—less than ½% of American banks participate in this business. The outstanding reason for this reluctance is the small remuneration received by banks for foreign financing and other transactions.

The Korean War and the Defense Program will have important repercussions on International Trade. The manufacturer of war implements will require the importation of more raw materials from abroad; on the other hand, countries which lack industrial equipment and know-how necessary to provide for their defense needs will have to obtain the equipment and finished products from abroad.

The rearmament program of the United States and the European nations will create inflationary pressure throughout the world. The depletion of national wealth by using raw materials for war purposes and the diversion of manpower to war production will diminish the supply of consumer goods. The availability of money will be much greater than the supply of goods with a resultant advance in prices. The wholesale price index has more than doubled since 1937 in most countries and where

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depreciation of money has taken place, prices advanced 20 to 50 times.

WHOLESALE PRICES 1937—100

	July-August, 1950
Australia	214
Belgium	373
Brazil	421
Canada	199
Denmark	245
France	2,480
India	383
Italy	4,920
Mexico	326
Spain	487
Switzerland	198
United Kingdom	243
United States	193

In the United States the supply of money is at a high point. Our money circulation in 1940 was about $9 billion, in August of 1950 it was over $27 billion. Bank deposits which in 1939 amounted to approximately $68 billion increased to $165 billion in August, 1950. Prices of major commodities in the United States have advanced greatly during the past decade.

	1938	Sept. 1950
Bacon—100 lbs.	$22.70	$49.30
Butter—100 lbs.	28.00	63.30
Cocoa—100 lbs.	5.30	42.03
Coffee—100 lbs.	7.80	56.06
Copra—100 lbs.	1.95	11.12
Sugar—100 lbs.	4.49	8.08
Tea—100 lbs.	28.00	53.06
Wheat—per bush.	.78	2.19
Burlap—per 100 yds.	4.90	25.09
Cotton—per 100 lbs.	9.00	40.50
Silk—per lb.	1.71	3.40
Wool—(Scoured) 100 lbs.	50.00	272.00
Copper—100 lbs.	10.22	23.25
Steel—(long ton)	35.40	54.00
Tin—100 lbs.	42.30	100.40
Rubber—(natural)	14.60	55.80
Jute—(short ton)	.86	3.16
Tobacco—100 lbs.	21.40	48.20

The great increase in purchasing power and the curtailment of civilian production is creating inflation which will adversely affect the living standards of our people. Inflation as you know, is the disease which affects all accumulated values, strikes at incomes, pensions and insurance. It is the greatest enemy of private enterprise. The simple cure for inflation is less governmental spending. However, there is little liklihood that our huge expenditures will be curtailed.

The inflationary pressure of the diminishing supply of civilian goods can be eased by increased imports. Large imports of consumer goods during the rearmament period will materially help check runaway prices for such goods. One of the greatest obstacles to imports is our archaic customs service, our hit and miss tariffs. Perhaps it would be well to suspend most of the duties during the emergency period. Our income from customs is contributing very little to our national budget.

The inflationary pressure of the rearmament program

(Continued on page 77)

Payment of Past-Due Argentine Commercial Dollar Obligations

The Export-Import Bank announced on November 14 the procedure for utilizing the credit to Argentina for the liquidation of past-due dollar commercial obligations. These are defined as all presently unpaid obligations which were due and unpaid as of May 15, 1950.

Under this arrangement, American creditors should file claims in triplicate not later than December 18, 1950 with the special commission of the Banco Central de la Republica Argentina, 1600 New Hampshire Avenue, Washington 9, D. C. No special form of statement of claim is required but each statement must contain a certification by the individual or institution filing that the facts are true and the amounts set forth are due and unpaid. Claims of U. S. commercial banks on account of letters of credit issued at the instance of branches or correspondents in Argentina should be filed by creditor banks and show amounts due from each correspondent. Claims evidenced by bills for collection should be filed by U. S. commercial banks with which bills were placed for collection and should show for each collection item the name of drawer/exporter, name of drawee/importer, nature of the goods, amount owed on bill and the date of draft or collection letter. Claims covering open account and similar arrangement between exporter and importer, including bills forwarded direct by exporters to Argentine banks for collection, should be filed by the individual exporters showing for each item the name of importer, nature of the goods, amount owed exporter and date of shipment of the goods. By certified check payable to order of creditors the Export-Import Bank will pay the debts certified to it by the Central Bank under this procedure and found eligible under the terms of the credit. It should be noted that earnings, dividends, royalties and other financial arrearages are not covered by the credit.

1951 Officers of Oakland World Trade Club

A world trade organization which attracts the best in speakers on such diversified subjects as shipping, export and import technique, defense, and world travel is the Oakland World Trade Club, at whose December meeting the following officers and directors were elected for 1951: President, Ray Giles; Vice-President, William Milwee; Treasurer, Cliff Reeves; Secretary, Lyford Morris; Directors, Max Gluck and Jack Grounds. Giles is in charge of public relations and advertising for the Pacific Coast Engineering Company, builders of industrial equipment as well as barges, dredges, and other marine units (have you seen the fireboat *Frank White*?) On both sides of the Bay he is a constant reminder of "Paceco" and of the Big Game. As a shutter-bug he is unsurpassed.

The members will hold their Annual Spanish Night and Installation of Officers at the Claremont Hotel on January 11. Jack Grounds is Chairman of the party which will feature music, entertainment, dancing and dinner.

History of Port of Long Beach

(Continued from page 35)

with its railroad service, was then erected by the railroad company in approximately the same location. However, the bridge was subsequently removed in 1935 to permit unimpeded use of the entrance channel.

The operations of the Los Angeles Dock and Terminal Company called for the dredging of three channels, designated as Channels 1, 2 and 3, spreading northerly and easterly from a turning basin which was connected with the Pacific Ocean by the 300-foot entrance channel. This entrance channel, located at approximately the outlet of the old San Gabriel River, was protected by rock jetties projecting into the ocean on either side of the channel.

In 1907 construction was started on the Craig Shipyard, which was the first major industry to be built in Long Beach Harbor. In 1908 an application was filed with the War Department for a permit to dredge a channel to connect the proposed Long Beach Inner Harbor with the Los Angeles Inner Harbor, the channel to follow approximately the course of the winding narrow natural channel which was known as Cerritos Slough. This permit was subsequently granted by the War Department and the channel is now known as Cerritos Channel.

In 1909, the first bond issue to cover the purchase of property and the development of the Port was approved by the voters of Long Beach. This bond issue was in the amount of $245,000 and provided for the purchase of certain water frontage in the Inner Harbor and the construction of a pier, wharf and shed which was completed by September of 1910.

The first cargo was unloaded at a municipal dock on June 24, 1911, when the S. S. *Iaqua* unloaded 280,000 feet of hardwood from Eureka at the newly completed municipal dock in the Inner Harbor, now known as Pier 1. The first regular steamship service was inaugurated by the *Santa Clara* of the old North Pacific Steamship Company in 1912, carrying passengers and freight coastwise.

For some time the Los Angeles Dock and Terminal Company attempted to continue its development program but experienced great difficulties by reason of floods and the fact that the river which flowed through the harbor became a raging torrent during the winter season and would fill in the dredged areas with huge quantities of sand and silt. These floods were so severe in 1913-14 that many predicted that there would never be a port of Long Beach. Because of these difficulties, the dredging project was turned over to the City of Long Beach in 1916 and the City received a deed to the channels and to a 4.7 acre parcel of land lying near Slip 5. The citizens then voted a second bond issue of $300,000 to complete the dredging of the channels in the Inner Harbor and the Turning Basin.

To curb such destruction and silting which was caused periodically by the river, a Los Angeles County Flood Control District was formed and this district issued $4,450,000 in bonds, to which an additional $1,080,000 was contributed by the state and federal governments, to construct a silt diversion channel. The federal government began construction on this channel, which is now known as the Los Angeles County Flood Control Channel, in 1919 and completed the work in 1923. By means of this project, the waters of the Los Angeles River now empty into the Pacific Ocean easterly of the harbor, thereby making permanent port development possible in the Port of Long Beach without the danger of floods and silting.

In 1924, the voters of Long Beach approved a $5,000,000 bond issue which was used principally in constructing a 7,284 foot breakwater along the southerly prolongation of the westerly bank of the Los Angeles Flood Control Channel, and in the construction of the east and west moles and bulkheads for the protection of the entrance channel. All of these projects were completed by 1928.

In 1928, the voters approved a bond issue in the amount of $2,700,000 for the construction of additional piers, wharves and similar facilities. The reconstruction of the present Pier 1 and the construction thereon of a transit shed with an area of 40,000 square feet were also commenced. A municipally-owned rail line to serve the Harbor District was also constructed at this time.

The 1928 bond issue in the amount of $2,700,000 proved to be the last bond issue necessary, as oil was discovered just west of the city limits and north of Cerritos Channel in 1936 and proceeds from oil development since that time have provided for the retirement of all outstanding bonds and the interest thereon and are providing for the development of the port.

1950 Development Of the Port of Long Beach

(Continued from page 37)

terminals in the country. The site is being operated as Pierpoint Landing, and, even under adverse conditions resulting from the period of construction, the terminal has been the scene of tremendous activity. Sport fishing during one month of the current season attracted over 20,000 fishermen from Long Beach Outer Harbor.

Victory Pier, which was constructed during World War II by the Corps of Engineers to lines and grades fixed by the Port and later purchased by the Port from the federal government, is the site of a new transit shed for which bids were received September 22. This building, except for length, will duplicate the 200 foot clear span so prominent as a feature of the Port's most recent transit shed construction. The structure will be 200 feet in width by 896 feet in length, will be of reinforced concrete and structural steel rigid frames with a fire wall at the mid-point. It will have a 520-foot wide apron wharf and a 20-foot wide rear loading platform with canopy over and will have two high line tracks and a wharf apron serving the berths separately from the adjacent inshore berths with three low line tracks to the rear of the rear loading platform.

The rapidly increasing movement of California cotton has necessitated the construction of a cotton storage shed to supplement transit shed space. The first such shelter is to be a 100-foot by 460-foot steel frame and corrugated sheet metal building, located to the rear of Berth 5 on Pier A with the distance from Berths 4, 5 and 6 sufficiently close to justify movement of mobile equipment directly to and from ship's tackle. This facility will have a high level track at shed floor level on one side and a low level track at the loading platform on the opposite side.

The 40 acres of newly-made land constructed during the past year and known as Piers B and C are being slowly developed with utilities, paving and fender systems to accommodate small craft, pending such time as the further expenditure for deep water craft is justified. On each of these two piers an area of approximately 300 feet by 500 feet has been reserved at the extreme seaward end of the pier for the concentrated location of oil wells which are expected to number approximately 180 and be directionally drilled in all directions, both beneath the land and beneath the slips and turning basin so as to minimize the interference between oil operations and harbor operations.

Pier D, first commenced in 1940 and constructed in a number of increments over the past ten years until it totalled an area of approximately 45 acres, was, during the past year, widened on the easterly side so as to provide the basis for three additional future berths. One of these three berths will be left unused because of special problems existing at the site for the next two or three years, whereas the other two berths, Nos. 29 and 30, are to be completed with utilities, asphaltic concrete pavement and fender system, complete, within the next six months for the purpose of accommodating one of the larger lumber operations in the area.

Special attention is being devoted this year to the initial phases of a long range program for providing proper ingress and egress to the Port by both highway and rail. Long Beach Harbor is the terminus of the Long Beach freeway, which is a 20-mile highway link in the comprehensive plan of freeways of Southern California. This 20-mile link will connect the largest industrial districts of Southern California by the most direct possible route to the harbor. The project is being developed by the California State Division of Highways as a six-lane roadway, with controlled access, and will terminate at approximately the north boundary of the Harbor District where the Port Commission will match the quality of the State's construction. Within the Harbor District the access will take the form of two complete main line railroad tracks, the elimination of some 11 existing grade crossings between highway and rail and the construction of four or more bridges over the Los Angeles river flood control channel. These bridges will also separate the bridge traffic crossing the river from all rail and highway traffic seeking ingress and egress to the Port. The initial unit of construction is the Anaheim Street bridge which involves approximately $2,000,000 in construction cost, including a complete cloverleaf or interchange system with the freeway, and some $700,000 worth of right of way in a rather intensively developed business and wholesale area.

The Tidelands and Long Beach

(Continued from page 41)

same reasoning any mine, oil well, factory, productive instrument or public utility anywhere in the United States?

In June, 1948, the rewritten quitclaim bill was voted out of the Senate judiciary committee with do-pass resolution.

However, Congress adjourned to attend national conventions, and the bill never was voted on by the Senate.

On July 2, 1948, the U. S. Supreme Court named a special master—now William H. Davis—to study the inland waters situation. He was to recommend to the court ways to determine the exact seaward boundary of inland waters along the California coast. Several indentations, including that of San Pedro Bay, are included. Davis still is studying this problem.

The Harbor Oil Field

(Continued from page 42)

royalties accruing to the City from said wells, depending upon the City's leasehold interest in each well, range from 9.1% to 50.0%.

The cumulative revenue to the City's General Bond Interest and Redemption Fund from the upland oil wells amounted to $16,062,000.00 as of September 30, 1950. At the same time the tideland oil properties had contributed $61,491,580.00 to the Harbor Revenue Fund; $17,037,976.00 to the Harbor Reserve Fund; and $9,007,471.00 to the Tideland Oil Fund.

With the exception of certain bonds of the Water and Gas Departments, the City of Long Beach has sufficient funds on hand to meet all outstanding bond issues and the upland oil revenues will accrue to the General Purpose Fund of the City.

By virtue of the combined production of oil from the tideland and upland oil wells, of approximately 69,000 barrels per day, the Harbor Department is the fourth largest producer of oil in the State of California. In addition, after the natural gasoline is extracted, the Harbor Department furnishes the resulting dry gas to the City Gas Department free of charge.

It is interesting to note that wells in the Harbor District are now producing from seven different zones, these zones being designated as the Tar, Ranger, Upper Terminal, Lower Terminal, Union Pacific, Ford and "237" zones. These zones range in depth from approximately 2200 feet, the depth of the Tar Zone, to 5700 feet, the depth of the "237" Zone. The gravity of the oil produced from these zones ranges from 14° to 32°.

Grace Line Adds Three Ships to Coffee Service

– and Entertains Industry at Orinda

FOLLOWING their usual practice of augmenting their service during the busy coffee season, Grace Line has added three ships to their Mexican/Central America/Buenaventura/Canal/Caribbean Service, making a total of seven vessels operating in this trade. These vessels, together with five of the fast C-2 type vessels calling at Buenaventura, Canal, Central America and Mexican ports enroute to and from the West Coast of South America, are in a position to render excellent service to the coffee trade.

Big Business

Coffee roasting is one of San Francisco's principal industries and is also a growing industry at other Pacific Coast ports. For example, during the year 1949 a little more than 3,000,000 bags of coffee were imported to the Pacific Coast of which approximately half came from Brazil and the balance from Colombia and Central America.

The importing of coffee, the warehousing of coffee, the roasting of coffee, the packing of coffee, the selling of coffee, the re-shipping of coffee, the retailing of coffee, have made coffee San Francisco's Number 2 industry (next to printing and publishing). We are not through with the importance of coffee, however, until we have included the manufacturers of coffee pots and percolators and all the labor and parts that go into them, and the fuel that operates them. And the restaurant people, to whom coffee is a vital product.

On the basis of present prices the green coffee value would amount to close to $250,000,000.

The green coffee importers as well as the roasters co-operate closely in connection with their mutual problems, having a San Francisco Coffee Association whose President is Edward W. Pattison of Leon Israel Bros. & Co. The 1950 President of the Pacific Coast Coffee Association is John Beardsley of Otis, McAllister & Co. President of the National Coffee Association is James De Armand, Vice President of J. A. Folger & Co.

The coffee association has for years had an active steamship committee, presently headed up by Walter O. Granicher of Leon Israel Bros. & Co., who work closely with the steamship companies to their mutual benefit.

Granicher succeeded Harold Gavigan of B. C. Ireland, Inc., who was chairman of this committee during the difficult war years when dock space for commercial cargoes was extremely limited, particularly during the time when German Submarine activity in the Caribbean, Gulf and Atlantic forced all Central American and Colombian coffees through Pacific Coast ports. Grace Line maintained uninterrupted coffee service throughout the war as agents for United States War Shipping Administration.

Grace Line Party

The Grace Line gave a well attended party for the green coffee importers and coffee roasters at Orinda Golf and Country Club on October 27. Luncheon and golfing were followed by dinner in the evening.

Coffee importers present at the party included the following: Clarence Levy, Harold King and Douglas Wood, of J. Aron & Co.; Fred Ruhland of C. C. Cambron Co.; Weldon Emigh and Lee Cavasso of Weldon Emigh Co.; W. V. Lynch, William Edgar and Fred De Bow, of

The C-1-MAV-1, "Sailors Splice," one of three vessels of this type which Grace Line added to its fleet for the coffee season. The other two are the "Coastal Rambler" and the "Ring Splice." A fourth ship, the "Square Sinnet," will be added this month.

Left to right: John Beardsley, Otis McAllister Company, President, Pacific Coast Coffee Association; D. N. Lillevand, Grace Line; Edward W. Pattison, Leon Israel Bros. & Company, President, San Francisco Coffee Association; James De Armand, J. A. Folger & Company, President, National Coffee Association.

W. R. Grace & Co.; William Rathy and Vernon Aldrich of Haas Bros.; William Fenner and Orin Nye of Hard & Rand Inc.; Ernest Kahl of Joe E. Hooper Co.; Robert Quinlan of B. C. Ireland, Inc.; Walter Granicher, Tom Duff and Edward W. Pattison, of Leon Israel Bros. & Co.; E. A. Johnson, Jr., John Roddy, Robert Powell and Harvey Brockhage, of E. A. Johnson & Co.; Jack Griffin of W. F. McClintock Co.; Jack Hornung of Nauman Gepp & Co. of California; Joe Fitzpatrick of Ortega & Emigh Inc.; William Nichelmann, Richard Wier and Al Sargent, of S. F. Pellas; Oz Granicher, Cedric Sheirer and Robert Richardson, of Ruffner, McDowell & Burch, Inc.; Olin Howell of Zeil & Co.; E. E. Hood and John Beardsley of Otis, McAllister & Co. Grace Line and Johnson Line personnel present were D. N. Lillevand, Harry Thompson, F. L. Hardy, H. A. March, G. T. Littlejohn, Harry Hunt, Capt. O. Dahlgren and J. A. Tomlin. Coffee roasters in attendance were: Peter Folger, James De Armand and William Seely, of J. A. Folger & Co.; Clarence Knutsen of George W. Caswell Co.; A. C. Golver of Mannings, Inc.; Wallis Riese of A. Schilling & Co.; Carl Corey of Standard Brands, Inc.; Reuben Hills, Carol Wilson, Ernie Shaw and Neil Hopping, of Hills Bros.; Stanley Onelion of Wellman Peck Co.; Allan Erhardt of Alexander Balart Co.; Arthur Woodman of Nestles Milk Co.

From top to bottom—

Sitting: Jack Hornung, Douglas Wood, Weldon Emigh, Neil Hopping, Walter Granicher, Robert Quinlan, Ernie Shaw, Harold King. Standing: Carol Wilson, David N. Lillevand, Olin Howell, G. T. Littlejohn, Jas. Fitzpatrick, E. E. Hood, Harry March, William Rathy.

Fred Ruhland, William Tenner, Harvey Brockhage, Ernest Kahl, Richard Wier, Robert Powell, Carl Corey, Stanley Onelion, Orin Nye.

Left to right: Lee Cavasso, Cedric Shearer, William Nickelmann, Edward W. Pattison, Clarence Knutsen, E. A. Johnson, Jr., G. T. Littlejohn.

Harry Hunt, Jack Griffin, Arthur Woodman, John Roddy, Oz Granicher, William Lynch, Reuben Hills, A. C. Glover, John Beardsley, Allan Erhardt.

Studying the coffee option market.

Running Lights

S. F. Navy Ship Repair Office Moved To Bethlehem

Naval ship repair and conversion work, already swamping the two Bay Area Naval Shipyards, has resulted in the establishment of a field office of the Assistant Industrial Manager to handle allocation of such work to private industrial plants.

Captain A. L. Becker, Commander of San Francisco Naval Shipyard and Assistant Industrial Manager for Naval ship work in private yards, announced the move of A.I.M. field headquarters from the Shipyard to a new location at Building 40, Bethlehem Shipbuilding Corp., 20th and Illinois streets, San Francisco. The move to this government-owned office building will allow adequate space for the ship allocation, planning, inspection, and contract work.

About 30 Naval officers and civilian employees are in the A.I.M. force. Captain M. G. Vangeli, Shipyard Planning Officer, will be deputy to Captain Becker, with both officers directing the work from their present offices at the shipyard. Captain Hugh MacKay will be Officer-in-Charge of the new field headquarters at Bethlehem.

Since July, more than $3,500,000 in work has been allocated to private yards. There are 15 ships being worked on now. Much of the work has been to reactivate reserve fleet ships, including "rush" assignments to prepare minesweepers for use in Korean waters.

Many of the ships required for Korean cargoes have had rapid repairs during their turnaround period here, because the 10 or 12 private yards and other industrial facilities in the Bay Area were available to handle this rush work.

"We know, also, that there is a tremendous backlog of repair work overdue for the large number of ships that have been participating in the Korean affair and other, normal Pacific fleet operations. Readying ships to go out to replace them, as well as repairing these vessels when they come back will furnish plenty of work for both the Naval Shipyards and the private yards for some time to come," Capt. Backer said.

During World War II, the A.I.M. office located in the Ferry Building, handled all Navy ship construction, repair and conversion work done in private yards, consisting of several thousand ships and untold milions of dollars. It required 600 Naval personnel and 700 civilians for the work.

Approximately $40,000,000 worth of buildings, materials, machine tools and other facilities, owned by the Navy, have been maintained in various conditions of readiness in Bay Area plants since the roll-back, and J. J. Rauly of the A.I.M. office has had charge of these government properties, and will move to the new headquarters as principal civilian assistant.

Other staff members moving to the new office are LCDR R. A. Rourke, Planning; LCDR V. W. Chippendale, Inspection; and LTJG Terrell Everett, Administration and Industrial Relations.

In addition to allocating Navy ship repair work to private yards, and then planning, designing and inspecting work progress, the A.I.M. office and San Francisco Naval Shipyard will provide logistic support for accomplishment of all work.

"With these expanded facilities," Captain Becker said, "No job on any Naval vessel need ever be turned away from repairs in the Bay Area. If the two Naval Shipyards, at San Francisco and Mare Island, are stacked up with their piers and facilities loaded with regularly scheduled and unscheduled jobs, the A.I.M. can steer such extra work into private yards. With such work distributed among private yards, they keep operating, become familiar with Navy work, and are ready for any future emergencies."

Captain Vangeli said that during most of the crisis in Korea, "private yards have done their utmost to meet deadlines, despite many difficulties. The outstanding manner in which the work was done reflects the great value of private yards as necessary adjuncts to the defense organization of the United States."

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Stability of Ships

(Continued from page 30)

The second section deals with the effect of ship proportions and arrangements on the relationship between available metacentric height and the required metacentric height calculated according to the provisions of the convention relative to the assumed extent of damage and the limiting condition of the ship after flooding. The reasoning leading to these assumptions is also discussed. The effect of heel due to negative residual GM vs. that due to unsymmetrical moment is considered. The influence of GM on the period of roll and, therefore, on a vessel's behavior at sea is discussed briefly. Data are presented indicating the effect of beam-draft ratio on both the required and the available GM, confirming the conclusion that an increase in beam generally increases the available GM more than the required GM. Data are presented indicating the effect of flooding over flats, and the effect of flooding of wing tanks, both unequalized and equalized. The beneficial effect of V-type transverse sections on the relationship between available and required GM is indicated. Methods of calculating the required GM are briefly discussed. Data from a series of stability model tests are presented indicating the very good accuracy of the Niedermair form coefficient for estimating the virtual GM and GZ gain with heel, for moderate values of heel and moderate beam-draft ratios.

The third section deals with the presentation of stability information for guidance in the operation of ships. The importance of simplicity and clarity in this information, as well as adequacy, is stressed. The desirability that such information take into account any special practical operational conditions peculiar to the ship's service is also indicated. Forms in which stability information is ordinarily supplied are described. An example stability booklet is illustrated. Instrumentations which may be used to determine the GM in operation are discussed, and the limitations of each one noted. The difficulties attendant on the use of the rolling motion of a vessel to determine its operational GM are especially noted, since this method has been frequently proposed. The presentation of stability information in the form of specific written instructions is discussed and example stability letters are illustrated. A possible new method for the preparation of stability information for use aboard ship is described in some detail and is illustrated by a complete set of data applicable to an example ship. This method depends upon the use of specially prepared tank capacity tables, and loading diagrams for the simple determination on board ship of the deadweight and virtual deadweight KG corresponding to any loading condition.

First Communist: "Nice weather we're having."

Second Communist: "Yes, but the rich are having it, too."

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Anchor Equipment Open House

The honor of holding the first affair of the Christmas maritime social season in San Francisco went to Anchor Equipment Company on December 1 for their party to celebrate moving into new quarters at 526 Folsom Street.

Though the modern new offices are quite spacious, the facilities of the warehouse had to be utilized for

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the large crowd that turned out to partake of a fine spread and fellowship in the marine manner.

Partners Alan Scurfield and Ted Jerstad were on hand to greet the guests, assisted by Bill Sabiston, Sam Nelson, Bill Mayer, John O'Laughlin and Isabel Gerlund. Head mixers were Dick De Berry and Bill Puckner, assisted by Lew Smith and Al Tonry, and costumes were through the courtesy of the St. Moritz Restaurant. Penn De Rochie of Pacific Marine Review was on hand with his camera to snap the pictures on the opposite page.

◀ Snapped at the Open House

1. Partners Ted Jerstad and Alan Scurfield of Anchor Equipment, and John MacArthur of Worthington Pump.

2. Genial Joe Ures, Crane Packing, watches suave John O'Laughlin, Anchor Equipment, with Mrs. L. P. Grover.

3. Distinguished guests line up for refreshments: George Spelvin; Fred Murdock, Pacific Instrument; George Miller, miner; Jack Bolts, Luckenbach; Charlie Bird, Luckenbach; Reeves Caron, Luckenbach; B. A. Webster, States Marine; Stan Perry, Dahl-Beck.

4. End of the Chow line. Fred Eckart, Consolidated Western Steel Corp. and Bob Blatt, Sudden & Christenson, with the modest second helping.

5. J. H. "Speedy" Watson, Waterman S.S.; Louis Deppman, Sudden & Christenson, Mrs. Deppman; Ray Slingluff, Schore-Gallis; Uncle Ed Fleming; Alan Scurfield, host.

6. Frank P. Murphy (he's a cop); Wen Garrett, Republic Electric (looking innocent); Mrs. F. P. Murphy; Al Buckner, Pacific Atlantic S.S.; A. R. Potter, Republic Electric; Gloria Rich, U. S. Army; Al Pittman, Hagan Corp.; Ray Brunetti, Oregon Cafe.

7. Claude Witzel, De Boom Paint, Stan Perry, Dahl-Beck, and Joe Jadrich, Pacific Tankers, (right) who is called on for a few remarks on the subject of valves.

8. The delegation from M.S.T.S. Left to right: B. R. Monroe, A. J. "Frenchy" Le Tendre, Mrs. Monroe, Bill Kurtzman, Jack Whedon, Jack Vernou, Hank Bleile, Mrs. Vernou, Mervyn Caughlan.

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Mayer Appointed P. A. S. Association General Manager

Robert E. Mayer has been advanced from Assistant to the President to Vice-President and General Manager of the Pacific American Steamship Association.

Gerald A. Dundon Made Vice-President of N. Y. Shipping Concern

Gerald A. Dundon has been appointed Vice President and Director of Bowring & Company, 17 Battery Place, New York City. He was formerly Vice President and General Manager of Pope & Talbot, San Francisco.

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Edward T. Ford Passes

Edward T. Ford, formerly vice-president in charge of the Pacific Coast territory for W. R. Grace & Company, died last month at his

Edward T. Ford

home in Santa Barbara, Calif., at the age of 71. Ford retired from W. R. Grace & Company in 1940, after 38 years with the company. He was at one time president of the Shipowners & Merchants Tug Boat Company (Red Stack tugs).

Swartwout Airfuge

A complete line of separators for cleaning compressed air by means of centrifugal force is announced by the Swartwout Company. Known as the Swartwout Airfuge, the separator is available in seven inlet and outlet tapping sizes, from 1½ inch to 2½ inches.

According to the manufacturer, the Swartwout Airfuge removes 99 per cent or more of all impurities from compressed air without pressure drop. Moisture, oil, scale and other solids in the air are whirled outward to the walls of the unit where they drain down to the trap section. At the same time the clean, dry air passes unimpeded to feed line or tool, operating the equipment without danger of corrosion, wear, clogging, fire, explosion or freezing which occur with contaminated air.

A float-operated trap automatically releases accumulated liquids as they rise to a level above that necessary to effect a seal. Drain valve outlet is tapered to prevent stoppage by particles of scale, etc.

Information on the complete Swartwout Airfuge line may be obtained by writing for Bulletin S-13 to The Swartwout Company, 18511 Euclid Avenue, Cleveland 12, Ohio.

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Stretching Steel With Water

At the new electric weld pipe mill of U. S. Steel's National Tube Company at McKeesport, Pa., water under pressures as high as 3,000 pounds a square inch is used to expand the diameter of big pipes. This expansion process makes it possible to produce pipe to the exact outside

Water gushes forth after stretching diameter of steel pipe. Pressure is reduced before the ram is withdrawn from this unusual machine at U. S. Steel's new electric-weld pipe mill in the National Works of National Tube Company at McKeesport, Pennsylvania. Using the power of water under pressures up to 3000 pounds a square inch, the diameter of heavy pipe is stretched as much as 1/2 inch.

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diameters. It also adds strength to the steel.

The pipes are made from heavy plates 40½ feet in length, from ¼ to ½ inch in thickness and varying in width from 79½ to 110½ inches. Each plate weighs from 2 to 3 tons. Special presses round the plates into tubes. The seam is welded inside and out. The tubes are then inspected and pass to the expander.

This machine is equipped with a fixed plug at one end and a movable ram on the other. Both the ram and the plug are tapered and fitted to insure water-tight connections when the pipe is in place. Pressure on the ram forces the tapered fittings into the tube, swelling the ends into a bell shape. Locked in place around the pipe is a die, machined to limit the stretch to the exact diameter specified by the customer.

Three pumps force water into the pipe from a 25,000 gallon reservoir. The thickness of the steel in the pipe walls determines the pressure needed.

As the pipe enlarges in diameter, naturally it is reduced in length. The ram automatically advances to maintain a tight seal on the retreating ends of the pipe.

When the tube is tight within the die, water pressure is lowered, the dies are opened and the pipe is tested and thoroughly inspected.

The ends are then beveled in a special cutting machine and after a final inspection the finished product is ready to be shipped.

A. G. Anderson Of Socony Heads Traffic League

A G. Anderson, general traffic manager of the Socony-Vacuum Oil Company, Inc., was elected president of the National Industrial Traffic League at that organization's annual meeting in San Francisco.

The league has a membership of approximately 1,500. It is a voluntary organization of shippers and receivers, the users and buyers of all types of transportation.

Until his election as president, Anderson was vice president of the league. He is a member of many traffic organizations including the Traffic Club of New York, the Associated Traffic Clubs of America, the Atlantic States Shippers' Advisory Board, the Association of Interstate Commerce Commission of Practitioners and the National Freight Traffic Association. He has been engaged in transportation activities since 1917.

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Continuous Casting of Steel

The present status of the continuous casting of steel and the possibilities it holds were outlined to the American Academy of Arts and Sciences by Isaac Harter, chairman of the board of The Babcock & Wilcox Tube Company.

The development of the new steelmaking process is being carried on jointly with The Republic Steel Corporation. Continuous casting of steel could presently be applied to about 15% of the nation's output and improvements now being perfected would increase its application to between 25 and 30 per cent of steel production.

Successful large scale experimental continuous casting of steel which had been sought by the steel industry for more than 100 years, was announced two years ago by the two companies. The pilot plant for the operation is located at the B&W Tube Company works in Beaver Falls, Pa. The two companies are working steadily to bring the process to a point where it can be applied by industry to reduce the cost of steelmaking and make possible the construction of steel mills for making moderate quantities of steel without resorting to the tremendous expenditures required for plants of conventional design.

At present it is possible to cast oval cross sections of 25 to 40 square inches by the continuous casting method. This size lends itself well to rolling into small bars, narrow width strip steel, rounds for wire products and many other items. During the next year there will be tested a new mold which will make it possible to produce a casting with a cross section of 100 square inches, suitable for rolling into 26 inch strip in a continuous sheet rolling mill. This mold will also be constructed so that it can be enlarged even further. In advising industry to consider continuous casting, Harter said that it is his belief that during 1952 continuous casting will have proved itself in production as a low-capital and high-yield method of making steel warranting its further and general extension in the steel industry.

LCI As Lumber Carrier

Marking the first time such a vessel has come to the Port of Oakland as a lumber carrier, the LCI *Nomad,* a type of vessel used as invasion landing craft during World War II, discharged 200,000 feet of lumber from Toledo, Oregon, November 6, at the Port of Oakland's Ninth Avenue Terminal for the Hogan Lumber Company.

The lumber was consigned to Oakland by the George E. Miller Lumber Co. of Portland, which has leased the vessel as an ideal craft to carry small allotments of lummer in the coastwise trade. Lumber formerly moved in the coastwise trade on the old steam lumber schooners, but has moved by rail and truck in recent years.

James L. Hall, Jr., of the Dennis Lumber Company of San Francisco, agent for the *Nomad,* pointed out that the small vessel, which carries a crew of seven including the captain, can transport only a fraction of the million and a half feet of lumber formerly carried by the lumber schooners. Hall said it was originally planned to send the vessel alternately to San Francisco Bay and Los Angeles, but that probably all shipments will be confined to the Bay Area.

The lumber cargo was discharged at the Ninth Avenue Terminal with the aid of a mobile truck crane, which deposited the lumber on the pier, where regulation lumber carriers placed it in piles.

Ship Bottom Corrosion

(Continued from page 31)

as to the performance of the paint and as a hidden threat should the paint protection deteriorate for any cause. Precautions are suggested to avoid mill scale corrosion, and case histories are cited to show the effectiveness of pickling and sandblasting. The paper concludes with some notes on cathodic protection by means of zincs, Norway or Swedish irons, and magnesium anodes. It points out that zincs and iron slabs in way of the propeller may be ineffectual in cathodically protecting the hull plating but they do serve as corrosion "doublers" which will bear the brunt of the corrosion caused by the flow of galvanic currents from bare steel to the manganese bronze propeller.

Financing World Trade

(Continued from page 63)

can also be eased if the Mutual Defense Assistance nations will participate in the production of armaments and implements needed for their defense. Such participation will create employment abroad and conserve our manpower. These nations should be assured the raw materials and machine tools necessary for such production.

The Economic Cooperation Administration should be designated to handle the greatest possible share of the $6 billion allocated for European defense and supervise the procurement of raw materials and industrial equipment needed by these countries to produce the defense implements. Th ECA should also assist the European nations by using Counterpart Funds to build up secondary industries in Europe and to strengthen existing industries that can participate in the rearmament program.

Inflation is one of the great dangers confronting our nation today. Imports and defense production abroad should be fully utilized to reduce this danger. The nations that have been receiving Marshall Plan assistance and are now receiving our aid for their defense must fully participate in the defense effort. After all, Communism is closer to their boundaries than it is to ours. Each nation must fulfill a task best suited to its capacities and traditions.

We must also remember that foreign trade is an important link in the friendly ties between nations. It is the foundation of world peace. We must, therefore, guard foreign trade against excessive government interference. We must keep it a private enterprise unencumbered by controls which have outlived their purposes.

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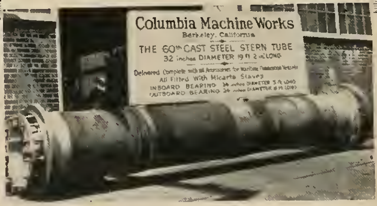

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Naval Architect Training

Naval Architect Mario Palmieri, who has long advocated the formation of a West Coast school of naval architecture and marine engineering, is arranging for the founding of such a school, and has announced that he will accept applications from twenty young high school graduates who intend to follow such careers as ship draftsmen, marine engineers, naval architects, etc., for instruction and training while working in his office in the Easton Building, Oakland, Calif.

Palmieri describes this as a modern conception of trade apprenticeship, where would-be professional people will be able to combine both practice and theory, and both the trainees and their prospective employers will benefit from the daily practical surroundings of the training period.

No stranger to the readers of this publication, Palmieri has written during years past on such diverse subjects as Concrete Ships and Towing Tanks for ship models. Also he has written on the importance of expanding training facilities on the West Coast so as to include courses in naval architecture for the general public. The completion of the wartime ship building program served, however, to undermine the interest which Palmieri had built up and it is in the expectation that this trend of disinterest has now turned that he is proceeding with his program.

Long Beach Radar

(Continued from page 47)

that the entrance buoy was in the correct location. This had everyone a bit befuddled until the Aids to Navigation Officer of the Coast Guard visited the Pilot House several days later and, much to Jake's chagrin, advised that the buoy had actually been moved "400 yards east" from the old location several months prior and the change had not been made on the chart.

Further tests were made from time to time, not only for accuracy, but also in order to familiarize the pilots and operating personnel with the equipment and its possibilities as applied to their particular line of endeavor. These tests carefully planned and executed have enabled the pilots to develop complete assurance in monitoring vessels into or out of port even during periods of dense fog.

To date, 102 vessels having a gross tonnage of 918,000 have benefited from radar assistance in the elimination of delays of anywhere from 2 to 24 hours each which adds up on the right side of the ledger.

The Sperry Radar shows an operating time of 3425 hours, 715 of which represent periods of dense fog. At one time the set remained energized continuously 24 hours a day for a period of seven weeks. Maintenance problems have been few and minor in nature.

In "Jake's" homespun opinion, which was expressed after easing in his last vessel through peasoup fog and which was reminiscent of remarks heard during the early days of automobiles and aeroplanes, "I guess radar's here to stay."

The Tug "Mahoe" Modernized

(Continued from page 49)

with those for the main bearing and so are the upper and lower halves. A special construction permits the withdrawal of the piston and connecting rod without disturbing the crankpin bearing. Enclosed cooling oil protects the piston crowns and cools the piston ring.

Bearings are pressure-lubricated from one central system. Oil is automatically fed to every bearing in the engine.

A single lever controls starting, stopping and reversing. No endwise movement of injection camshaft is required. A small movement of the air start cam by a positive linkage is the only variation when reversing.

Combined Ore Carrier And Tank Motorship

(Continued from page 54)

reach the poop and crew accommodations aft through built-in passages below poop deck. These passages are especially convenient in bad weather and also afford a good housing for pipe line and wiring systems. The bridge house has a tower-like appearance and encloses, in addition to apartments necessary for navigation, only two cabins. Accommodations fot officers and crew have been arranged in the large deckhouse aft where there are also messrooms and crew's dayroom. All cabins are single cabins and there is a special leisure time room for movies and other entertainments of the crew.

The main engine is of the welded, two cycle, single acting Gotaverken type, having 8 cylinders of 680 millimeters bore and 1500 millimeters stroke, developing 7,350 I.H.P. at 112 revolutions. Service speed is 14 knots.

The *Porjus* is the twenty-fifth ship delivered to her owners by Gotaverken, bringing their fleet of ore-carriers to a total of about 214,000 tons d.w.

Trend of the Times

(Continued from page 57)

$56^{m}\ 52^{s}$ if she had been on a course of 145° True.

Possibly this method as explained here may seem quite lengthy. Such is not really the case as you will see after trying it a couple of times. The reason that it appears to be so lengthy here is the detail with which I have attempted to explain it for the purpose of clarity.

It is the sincere hope of "The Skipper" that this article will help some navigators to carry out, perhaps just a little more efficiently this small phase of their many duties. Watch in this column for another article soon which (it is hoped) will enable more ship's officers to contribute their share toward a more efficiently operated vessel, thus helping themselves to keep up with "The Trend of The Times."

Brown: "Do you believe in clubs for women?"
Black: "Yes, if kindness fails."

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Top: Personnel of Andreassen and Company, Mrs. L. M. Dacre, Malcolm L. Andreassen, General Manager, and Robert Andren, Assistant Manager.
Bottom: The Andreassen plant at Wilmington, Calif.

Andreassen & Company Opens New Wilmington Branch

With special qualifications for handling engine and electrical problems on foreign as well as American ships, Andreassen & Company, Inc. announces the opening of their new facilities at 531 North Fries Ave., Wilmington, Calif. The branch is headed by M. Andreassen as general manager, who is experienced in all phases of marine engineering. He first went to sea in 1925 and for many years was chief engineer on various Johnson Line ships.

The facilities include marine electrical supplies and shop for overhaul of electrical and refrigeration equipment, as well as a comprehensive stock of foreign electrical and machine shop equipment.

The building is equipped with high voltage for handling welding repairs and has facilities for storage of large equipment, in addition to such specialties of the house as Double Seal Piston Rings and Wynn's Friction Proof Oil.

Office telephone number is Terminal 4-5059; night phone—Terminal 4-7695.

New Features in Big Oil Barge

(Continued from page 52)

stalled by Ets-Hokin and Galvan of San Francisco. All cargo valves on deck are the Merco-Nordstrom plug type. All cargo valves in the tanks are Crane nonrising stem valves.

In addition to the new design of the barge hull, Paceco has introduced and installed on this barge a new design of skeg. The skeg is of an air foil section and of such a design as to minimize resistance and satisfactorily produce the desired effect of maintaining the vessel on its course.

Both the forward and aft end corners of the barge are of large radii to facilitate directing the vessel without injury to piers and bulkheads.

Another unique innovation in this barge is the method of handling the towing bridle. This bridle consists of 2½-inch chain and weighs 21 tons. Through a system of rollers, sheaves and hand hoists on the deck forward the bridle can be taken from the tug and made fast to the barge as it hangs on the headlog. Immediately after the barge is launched the keel will be laid for Hull No. 145, which will be the largest barge ever built by Pacific Coast Engineering Company. Its principal dimensions will be 250 ft. in length, 46 ft. in beam, 18 ft. in depth, and it will have a capacity of 33,000 bbls. of petroleum products.

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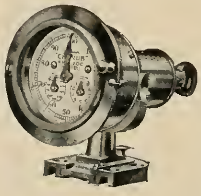

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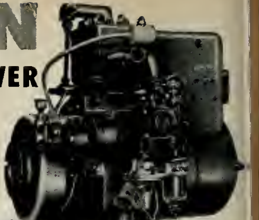

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The "Jim Melton" (left) is one of many work boats equipped with an Onan Electric Plant.

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ONAN ELECTRIC PLANTS

Radar and It's Practical Application

(Continued from page 46)

to 8-minute plot will bring this out to a careful plotter.

There are several points brought out by the foregoing discussion. There is of course the old and well-known point that if a deck officer will not accept a situation other than one in which the vessels will pass well clear, then errors will manifest themselves early in the course of events. On the other hand, if the situation is such that a close passing is planned, then the plot will not clear itself early, and one may find himself with a particular set of data which indicates that he will clear whereas in fact the opposite will be true.

Another point of interest in that a dangerous situation will manifest itself even with sizable radar errors, providing a careful and continuous plot is maintained. Even with the worst case presented here, after 20 minutes, while the vessels were still over 2 miles apart, the radar error would not have been large enough to have kept a careful plotter from noting that something was wrong.

The foregoing dictates that (1) a deck officer must know his radar errors, (2) that he must plan to pass sufficiently clear so that a dangerous situation will be noted early in the course of events, and (3) that he must continue to observe and plot until the danger is well past and clear.

This article is reprinted from the "Proceedings of the Merchant Marine Council," United States Coast Guard. The drawing is by Lt. Comdr. L. B. Kendall, U. S. Coast Guard.

New Grace Line Pier

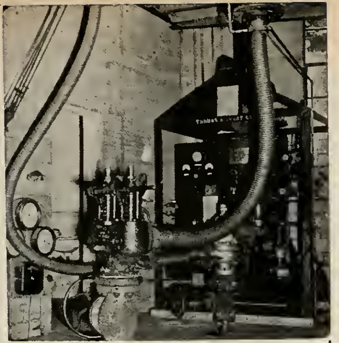
(Continued from page 53)

site and sunk, will be 82 feet wide, 350 feet long, and 25 feet deep, with girders placed across them at 20-foot intervals to support the weight of the pier and its contents. As the pier superstructure is installed, the boxes will be drained gradually. Their design has been so conceived that the upward pressure of the water on the boxes will support the entire "dead" or structural weight. Provisions for the added support needed to carry the "live" load (cargo, trucks, etc.) is made by inserting large vertical reinforced concrete piles attached to the boxes and projecting downward well into ledge rock. The bulkhead sub-structure will be similar in construction to the pier except that one longer box will be used extending in a north and south direction. This box which is designed with two sub-surface levels primarily for storage purposes will have entrance and exit ramps from the street level at either end.

The new structure replaces the old pier destroyed by fire in 1947.

An economist is a guy with a Phi Beta Kappa key on one end of a chain and no watch on the other.

It's a shame these talkers who talk straight from the shoulder can't talk from a little higher up.



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C. H. Wheeler of Philadelphia Merges With Hamilton-Thomas Corp.

In one of the major industrial mergers of recent months, L. G. L. Thomas, president of Hamilton-Thomas Corporation of Hamilton, Ohio, announced the acquisition of the capital stock of the C. H. Wheeler Manufacturing Co., Philadelphia. In reporting the move, the Ohio industrialist stated that no change in the operation of either company was contemplated.

Known as "C. H. Wheeler of Philadelphia," the new subsidiary, with assets of approximately $3,000,000, is an engineering and manufacturing organization which has been designing and building steam condensing, vacuum producing and water cooling equipment for more than 50 years. Principal products include: steam condensers and auxiliaries, steam ejector type vacuum pumps, steam jet vacuum cooling equipment, heat exchangers, water cooling towers, condensers, and fine particle process machinery.

The Wheeler concern also makes deck machinery used on luxury liners, cargo vessels and smaller craft such as ferry boats and yachts. This line includes cranes, windlasses, winches, capstans and steering gear. Virtually every ship in the U. S. Navy has C. H. Wheeler equipment.

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Magnus Chemical In California

John Parkhurst, service representative, and J. D. Holmes, manager, of Magnus Chemical Company, Garwood, N. J., chat with Alax Johnson (right) owner of Jaxon Engineering Specialties, newly appointed Northern California marine representatives for the firm's line of water and fuel oil treatment, refractory coatings, heat exchanger cleaners, and general cleaning chemicals.

The Seaside Supply Company of San Pedro has been appointed as their Los Angeles Harbor area marine distributor.

"Benjie Boy" New Purse Seiner

The 65 foot *Benjie Boy*, newest purse seiner to be built in Southern California, was launched at the Elite Boat Works in San Pedro on October 31. The *Benjie Boy*, owned by Capt. Frank Breskovich, has the new type Enterprise engine, rated at 240 hp at 750 rpm and is equipped with a Western Gear Works model 72 reverse and reduction gear with power takeoff. The gear is a 2:1 ratio and the power takeoff on the gear is used to operate a Northern dragger winch. The seiner was designed by A. C. Tamkey and incorporates a number of new innovations, incuding a hollow metal mast which is used for storing compressed air for engine starter.

Launching of the "Benjie Boy."

Westinghouse Fans Ordered For Superliner

Specially-designed electric fans will help natural ocean breezes cool passengers on the nation's largest and fastest superliner, the SS *United States,* now being built by the Newport News Shipbuilding and Dry Dock Company. An order for these oscillating fans has been received by Westinghouse Electric Appliance Division. Shipment is scheduled for the summer of 1951. Included in the order are 12-inch and 16-inch fans, to be installed in staterooms and public rooms.

All the fans will be specially-treated to resist salt air conditions. All electrical parts will be impregnated with special insulation protection and the metal parts will be safeguarded against corrosion.

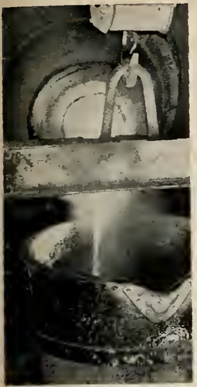
Difficult Shipyard Jobs Speeded by Powder-Cutting

Construction and repair can be speeded with powder-cutting in the modern shipyard. Among the many difficult cutting jobs encountered are the cutting of stainless steel door casings for ship boilers, the cutting and beveling of brass bars and bronze plates, the severing of cast iron sections, and the cutting of copper pipe into sections. The normal method has been either to attempt the job with a large oxy-acetylene blowpipe, or to use arc cutting, or to send the job to the machine shop.

Powder-cutting is an easy, quick, and economical way to perform these difficult cutting jobs in the shipyard. An iron powder is carried through a tube attached to an oxy-acetylene blowpipe. The ignition of the iron powder provides the extra heat needed to cut through such metals as stainless steel, copper, aluminum, cast iron, and various alloys. The powder-cutting blowpipe will pierce, bevel, and cut most commercial metals, with very nearly the same speed and efficiency that an ordinary oxy-acetylene blowpipe cuts through carbon steel.

In the accompanying illustration, powder-cutting is being demonstrated for the cutting of stainless steel plate at Alabama Dry Dock and Shipbuilding Company, Mobile, Alabama. A regular Oxweld C-32 Oxy-Acetylene Blowpipe, a product of The Linde Air Products Company, is being used. It has been equipped with a special powder-cutting attachment for this work. A small portable powder dispenser is in the background.

An Oxweld C-32 Oxy-Acetylene Blowpipe, equipped with a special powder-cutting attachment, is being used in the powder-cutting of stainless steel plate at Alabama Dry Dock and Shipbuilding Company, Mobile, Alabama.



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I, Charles Lounsbury

being of sound mind and disposing memory, do hereby make and publish this, my last will and testament, in order as justly as may be to distribute my interest in the world among succeeding men.

I give to the fathers and mothers, in trust for their children, all good little words of praise and encouragement, and all quaint pet names and endearments, and I charge said parents to use them justly and generously, as the needs of their children may require.

I leave to children inclusively, but only for the term of their childhood, all and every, the flowers of the fields, and the blossoms of the woods, with the right to play among them freely according to the customs of children, warning them at the same time against thistles and thorns. And I devise to children the banks of the brooks, the golden sands beneath the waters thereof, the odors of the willows that dip therein and the white clouds that float high over the giant trees. And I leave the children the long, long days to be merry in, in a thousand ways, and the night and the moon and the train of the milky way to wonder at, but subject nevertheless to the rights hereinafter given to lovers.

I devise to boys jointly all the useful idle fields and commons where ball may be played; all pleasant waters where one may swim; all snow-clad hills where one may coast; and all streams and ponds where one may fish, or where, when grim winter comes, one may skate; to have and to hold the same for the period of boyhood. And all meadows with the clover blossoms and butterflies thereof, the woods and their appurtenances, the squirrels and birds, and echoes and strange noises, and all distant places which may be visited, together with the adventures there found. And I give to said boys each his own place at the fireside at night, with all pictures that may be seen in the burning wood, to enjoy without let or hindrance and without any incumbrance or care.

To lovers, I devise their imaginary world, with whatever they may need—as the stars of the sky, the red roses by the wall, the bloom of the hawthorn, the sweet strains of music, and aught else they may desire to figure to each other the lastingness and beauty of their love.

To young men jointly, I devise and bequeath all boisterous, inspiring sports of rivalry, and I give to them the disdain of weakness and undaunted confidence in their own strength, though they are rude. I give to them the power to make lasting friendships, and of possessing companions, and to them exclusively I give all merry songs and brave choruses, to sing with lusty voices.

And to those who are no longer children or youths or lovers, I leave memory, and I bequeath to them the volumes of the poems of Burns and Shakespeare and of other poets, if there be others, to the end that they may live over the old days again.

To our loved ones with snowy crowns I bequeath the happiness of old age, the love and gratitude of their children until they fall asleep.

Among the effects of an inmate of the Chicago poorhouse upon his death years ago was the now famous "Lounsbury will." Charles Lounsbury had been an attorney, apparently a well-educated, successful man who had fallen upon evil days which ended in the alms house. The "will" was written in the firm, strong hand of a well-bred man and was discovered by a law reporter, Barbary Boyd, who brought it to the attention of the Chicago Bar Association. That astute body of counselors-at-law, after hearing the reading of the will, ordered the document to be probated and today it is spread upon the records of Cook County, Ill. Reprinted many times, the famous will is almost as essential a part of Christmas as holly, mistletoe and Dickens' "Christmas Carol."